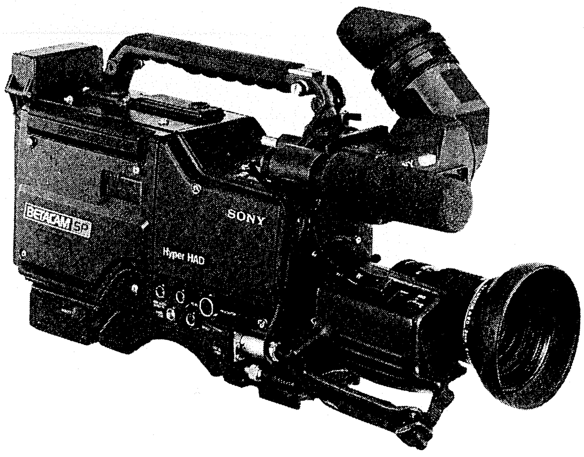
SONY

VTR IN CAMERA

BVW-400AP


SONY
BETACAM SP
Hyper HAD

BETACAM SP

MAINTENANCE MANUAL

Volume 1 1st Edition (Revised 4)
Serial No. 40001 and Higher

X-RAY RADIATION WARNING

Be sure that parts replacement in the high voltage block and adjustments made to the high voltage circuits are carried out precisely in accordance with the procedures given in this manual.

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下記のシリアルナンバー以降より基板名が変更になったものがあります。従って、このマニュアルに記載されている基板名称を下記のように読み替えてご使用下さい。なお、調整方法及び規格などの記載内容に変更はありません。

NOTE：

The names of some boards have been changed. In this manual old names may be read as new names according to the following table. However, the adjustment procedures and specifications, etc. remain as described in this manual.

BOARD CHANGE INFORMATION	SERIAL NUMBER
OLD NAME ⇨ NEW NAME	
PS－162 ⇨ PS－162B	30181 AND HIGHER : J 10148 AND HIGHER : UC 40316 AND HIGHER : EK
TC－48A ⇨ TC－48B TC－48AP ⇨ TC－48BP	
SW－291 ⇨ SW－291A	30216 AND HIGHER : J 10158 AND HIGHER : UC 40361 AND HIGHER : EK

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SECTION 1
TECHNICAL INFORMATION

1-1. SPECIFICATIONS (for BVW-400A (UC))

(with standard playback machine)

(1) General

Power requirements
DC 12V (11V to 17V)
Battery pack NP-1B (Ni-Cd, 2.3Ah)
or NP-1A (Ni-Cd, 1.7Ah)
For AC operation: use optional AC-500 AC adaptor

Power consumption
22 W
(using a metal particle tape, 12V)

Operating temperature
0°C to +40°C

Operating humidity
Less than 85% (relative humidity)

Storage temperature
–20°C to +60°C

Weight Approx. 5.2 kg
Battery pack
NP-1B, NP-1A: 0.7 kg
BP-90A, BP-90 : 1.7 kg

Dimensions
132 x 208 x 370 mm (w/h/d)
(Not incl. projecting parts and controls)

Video cassette
1/2 inch, cassette tape for Betacam format
Metal particle tape
BCT-5M/10M/20M/30M or equivalent
Oxide tape
BCT-5G/10G/20G/30G or equivalent

Tape speed
Approx. 118.6 mm/sec

Recording playback time
More than 30 minutes (with BCT-30M)

F.FWD time
Less than 9 minutes (with BCT-30M)

REW time
Less than 5 minutes (with BCT-30M)

Continuous Operating time
Approx. 60 minutes (with NP-1B)

(2) CONNECTOR

AUDIO IN	
CH-1/CH-2 (REAR)	XLR-3 pin (female)
GENLOCK VIDEO IN	BNC
TC IN	BNC
TC OUT	BNC
VIDEO OUT 1/2	BNC
EARPHONE OUT	Mini jack
PB ADAPTOR	20 pin
LENS	12 pin
REMOTE	6 pin
VF	20 pin
DC IN	XLR-4 pin
DC OUT 12V	4 pin
MIC IN (FRONT)	XLR-3 pin (female)

(3) CAMERA

CAMERA
Imager 2/3-inch frame interline-transfer, 3 chip
Imager configuration
RGB 3-CCDs
Spectral system
F1.4 prism system (with quartz filter)
Built-in filters
1:3200K
2:5600K + 1/4 ND
3:5600K
4:5600K + 1/16 ND
Lens mount
Special bayonet type
Video output
1.0 Vp-p, 75 ohms, unbalanced, sync negative, two outputs
Sensitivity
2000 lux with F8 (typical), 89.9 % reflection
Minimum subject illumination
7.5 lux (F1.4 with + 18 dB gain setting)
Video signal-to-noise ratio
62 dB (typical)
Horizontal resolution
700 TV lines (at center)
Registration
0.05 % or less on entire screen (without lens)
Geometric distortion
Not identified (without lens)

VIEWFINDER
Picture tube
1 1/2 inch monochrome, quick start type with BRIGHT control, CONTRAST control, PEAKING control, TALLY switch, ZEBRA/MARKER switch, AUDIO/TAPE INDICATOR switch,
AUDIO LEVEL CH-1 control
Resolution
600 TV lines (at center)

(4) VTR

Video system
With a metal particle tape
Bandwidth
Luminance :
30 Hz to 4.5 MHz +0.5/–3.0 dB
Chrominance :
30 Hz to 1.5 MHz +0.5/–3.0 dB
S/N
Luminance :
More than 51 dB
AM :
More than 53 dB
PM :
More than 53 dB
DG Less than 2 %
DP Less than 2°
K-factor (2T pulse)
Less than 2 %
Y/C delay
Less than 20 nsec

With an oxide tape
Bandwidth
Luminance :
30 Hz to 4.1 MHz +0.5/–6.0 dB
Chrominance :
30 Hz to 1.5 MHz +0.5/–3.0 dB
S/N
Luminance :
More than 48 dB
AM :
More than 50 dB
PM :
More than 50 dB
DG Less than 3 %
DP Less than 3°
K-factor (2T pulse)
Less than 3 %
Y/C delay
Less than 20 nsec

Longitudinal (Audio channel 1, 2)
With a metal particle tape
Frequency response
50 Hz to 15 kHz +1.5/–3.0 dB
S/N More than 72 dB (3 % distortion)
Distortion (T.H.D)
Less than 1.5 % (1 kHz reference level)
Cross talk
Less than –55 dB (1 kHz reference level)
Wow and flutter
Less than 0.15 % rms

With an oxide tape
Frequency response
50 Hz to 15 kHz ± 3.0 dB
S/N(NR OFF)
More than 50 dB (3 % distortion)
(with DOLBY NR off)
Distortion (T.H.D)
Less than 2.0 % (1 kHz reference level)
Crosstalk
Less than –55 dB (1 kHz reference level)
Wow and flutter
Less than 0.15 % rms

AFM (Audio channel 1,2 recorded metal tape)
Frequency response
20 Hz to 20 kHz +0.5/–2.0 dB
Dynamic range
More than 80 dB (1 kHz reference level)
Distortion (T.H.D)
Less than 0.5 % (1 kHz reference level)
Crosstalk
Less than –65 dB (1 kHz reference level)

(5) Microphone

Gun-directional, for the phantom power supplied system

1-1. SPECIFICATIONS (for BVW-400AP (EK))

(with standard playback machine)

(1) General

Power requirements
DC12V (11V to 17V)
Battery pack NP-1B (Ni-Cd, 2.3Ah)
or NP-1A (Ni-Cd, 1.7Ah)
For AC operation: use optional AC-500CE
AC adaptor
Power consumption
22 W
(using a metal particle tape, 12V)
Operating temperature
0°C to +40°C
Operating humidity
Less than 85% (relative humidity)
Storage temperature
–20°C to +60°C
Weight Approx. 5.2 kg
Battery pack
NP-1B, NP-1A : 0.7 kg
BP-90A, BP-90 : 1.7 kg
Dimensions
132 x 208 x 370 mm (w/h/d)
(Not incl. projecting parts and controls)
Video cassette
1/2 inch, cassette tape for Betacam format
Metal particle tape
BCT-5M/10M/20M/30M or equivalent
Oxide tape
BCT-5G/10G/20G/30G or equivalent

Tape speed
Approx. 101.5 mm/sec
Recording playback time
More than 36 minutes (with BCT-30M)
F.FWD time
Less than 9 minutes (with BCT-30M)
REW time
Less than 5 minutes (with BCT-30M)
Continuous Operating time
Approx. 50 minutes (with NP-1A)

(2) CONNECTOR

AUDIO IN	
CH-1/CH-2 (REAR)	XLR-3 pin (female)
GENLOCK VIDEO IN	BNC
TC IN	BNC
TC OUT	BNC
VIDEO OUT 1/2	BNC
EARPHONE OUT	Mini jack
PB ADAPTOR	20 pin
LENS	12 pin
REMOTE	6 pin
VF	20 pin
DC IN	XLR-4 pin
DC OUT 12V	4 pin
MIC IN (FRONT)	XLR-3 pin (female)

(3) CAMERA

CAMERA
Imager 2/3-inch frame interline-transfer, 3 chip
Imager configuration
RGB 3-CCDs
Spectral system
F1.4 prism system (with quartz filter)
Built-in filters
1:3200K
2:5600K + 1/4 ND
3:5600K
4:5600K + 1/16 ND
Lens mount
Special bayonet type
Video output
1.0 Vp-p, 75 ohms, unbalanced,
sync negative, two outputs
Sensitivity
2000 lux with F8 (typical),
89.9 % reflection
Minimum subject illumination
7.5 lux (F1.4 with +18 dB gain setting)
Video signal-to-noise ratio
60 dB (typical)
Horizontal resolution
700 TV lines (at center)
Registration
0.05 % or less on entire screen
(without lens)
Geometric distortion
Not identified (without lens)

VIEWFINDER
Picture tube
1 1/2 inch monochrome, quick start type
with BRIGHT control, CONTRAST control,
PEAKING control, TALLY switch,
ZEBRA/MARKER switch, AUDIO/TAPE INDICATOR switch,
AUDIO LEVEL CH-1 control
Resolution
600 TV lines (at center)

(4) VTR

Video system
With a metal particle tape
Bandwidth
Luminance (50%) :
25 Hz to 5.5 MHz +0.5/-3.0 dB
Chrominance :
30 Hz to 1.5 MHz +0.5/-3.0 dB
S/N
Luminance* :
More than 48 dB
Color difference :
More than 48 dB
Low frequency non-Linearity
Less than 3 %
Pulse shape distortion (K-pulse 2T)
Less than 2 %
Y/C delay
Less than 20 nsec

With an oxide tape
Bandwidth
Luminance :
25 Hz to 4.0 MHz +0.5/-6.0 dB
Chrominance :
30 Hz to 1.5 MHz +0.5/-3.0 dB
S/N
Luminance* :
More than 46 dB
Color difference :
More than 45 dB
Low frequency non-Linearity
Less than 4%
Pulse shape distortion (K-pulse 2T)
Less than 3 %
Y/C delay
Less than 20 nsec

* The iuput/output levels of the component signals conform to the EBU "N-10" standard.

Audio system
Longitudinal (Audio channel 1, 2)
With a metal particle tape
Frequency response (20 dB below peak level)*1
50 Hz to 15 kHz +1.5/–3.0 dB
S/N*2 More than 62 dB
Distortion (at 1 kHz)
at peak level*1 Less than 3 %
at OVU level Less than 1.5 %
Cross talk (at 1 kHz)
Less than –55 dB
Wow and flutter (DIN 45507)
Less than 0.15 %
Depth of erasure (at 1 kHz)
More than 65 dB

With an oxide tape
Frequency response (20 dB below peak level)*1
50 Hz to 15 kHz ± 3.0 dB
S/N*2 More than 58 dB (with DOLBY NR on)
Distortion (at 1 kHz)
at peak level*1 Less than 3 %
at OVU level Less than 2 %
Cross talk (at 1 kHz)
Less than –55 dB
Wow and flutter (DIN 45507)
Less than 0.15 %
Depth of erasure (at 1 kHz)
More than 65 dB

AFM (Audio channel 1,2 recorded metal tape)
Frequency response (20 dB below peak level)*1
20 Hz to 20 kHz +0.5/–2.0 dB
S/N*2 More than 68 dB
Distortion (at 1 kHz)
at peak level*1 Less than 3 %
at OVU level Less than 0.6 %
Cross talk (at 1 kHz)
Less than –65 dB

*1) Peak level AFM: +19 VU, LNG: +8 VU
*2) Refered to peak level, weighted CCIR468-3, with Audio N.R.

(5) Microphone

Gun-directional, for the phantom power supplied system

1-2. INPUT/OUTPUT SIGNALS OF THE CONNECTORS

INPUT

AUDIO IN (REAR)	BVW-400 (UC): –60 dBu / +4 dBu (selectable) BVW-400P (EK): –60 dBs / +4 dBs (selectable) high impedance, balanced
GENLOCK VIDEO IN	1.0 Vp-p, 75 ohms
TC IN	0.5 to 18 Vp-p, 10 kohms
DC IN	11 to 17 V
MIC IN (FRONT)	BVW-400 (UC): –60 dBu (0 dBu = 0.775 Vrms) BVW-400P (EK): –60 dBs (0 dBs = 0.775 Vrms)

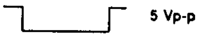
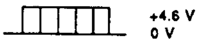
OUTPUT

VIDEO OUT	1.0 Vp-p, 75 ohms
TC OUT	1.0 Vp-p, 75 ohms
DC OUT	11 to 17 V

VF CONNECTOR (20P)

No.	SIGNAL	SPECIFICATION
1	VTR SAVE	SAVE: 0 V, STBY: +9.3 V
2	IND ON/OFF	ON: 0 V, OFF: +9.3 V
3	NC	—
4	NC	—
5	MARKER $\overline{\text{ON}}$/OFF	ON: 0V, OFF: +4.6 V
6	CCIR/EIA	CCIR: +8.5 V, EIA: 0 V, Zo = 1 kΩ
7	AUDIO IND ON/OFF	ON: +4.6 V or OPEN, OFF: 0 V, Zo = 1.5 kΩ
8	VF VIDEO (G)	GND
9	NC	—
10	NC	—
11	ZEBRA ON/OFF	ON: 0 V, OFF: OPEN or +9.3 V
12	VF VIDEO (X)	Zo ≦ 100Ω 1 Vp-p
13	AU LEVEL CONT	0 V (0 dB) to +7 V (–20 dB)
14	NC	—
15	NC	—
16	H:BATT IND	ON: +5 V, OFF: 0 V or OPEN
17	REC/ALARM	ON: +9 V, OFF: 0 V or OPEN
18	+9.3 V (VF)	+9.3 V
19	UNREG GND	GND
20	UNREG +12V	+11 V to +17 V

REMOTE CONNECTOR (6P)

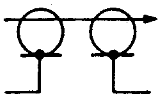
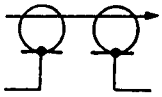
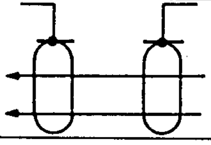
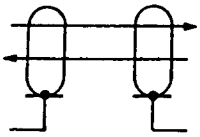
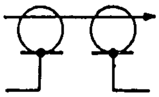
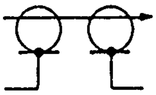
No.	SIGNAL	SPECIFICATION
1	L:VTR START/STOP	TRIG:  5 Vp-p
2	CAMERA SD	SERIAL DATA  +4.6 V 0 V
3	UNREG GND	GND
4	NC	—
5	REC ALARM	ON: +9 V, OFF: 0 V or OPEN
6	UNREG +12 V	+11 V to +17 V

CCZ CONNECTOR (26P)

Fit the VTR connector unit BKW-402 which is separately available in the market to the main unit and connect with BVW-35/35P/25/25P, VA-5/5P and BVV-5/5PS by CCZ cable.

No.	SIGNAL	BVW-400/400P	DIRECTION	EXT VTR SIDE
1	VBS OUT (X)	Zo = 75Ω 1Vp-p±1dB DC = 0±100mV	→	Zi = 75Ω
2	VBS OUT (G)			
3	Y VIDEO OUT(G)	Zo = 75Ω 1Vp-p±0.5dB DC = 0±200mV	→	Zi = 75Ω
4	Y VIDEO OUT(X)			
5	R-Y VIDEO OUT(X)	Zo = 75Ω 700mVp-p (NTSC) 525mVp-p (PAL) EBU N-10 LEVEL (75% color bars)	→	Zi = 75Ω
6	R-Y VIDEO OUT(G)			
7	B-Y (X)	Zo = 75Ω 700mVp-p (NTSC) 525mVp-p (PAL) EBU N-10 LEVEL (75% color bars)	→	Zi = 75Ω
8	B-Y (G)			
9	AUDIO CH1 (X)	–60dBm Zo≦600Ω (BALANCED)	→	Zi = 3KΩ ~ 10KΩ (BALANCED)
10	AUDIO CH1 (Y)			
11	AUDIO CH1 (Z)			
12	VTR START/$\overline{\text{STOP}}$	START : 4.5 ±0.5Vdc STOP : 0 ±0.5Vdc Zo≦10KΩ	→	START: 5^{+3}_{-1}V STOP: $0^{+0.3}_{-0}$ V or OPEN
13	NC	——		
14	NC	——		——
15	REC ALARM IN	Zi≧20KΩ	←	
16	NC	——		——
17	SHIELD	——	↔	GND
18	RET VIDEO IN (X)	Zi = 75Ω	←	Zo = 75Ω 1Vp-p ±1dB DC = 0±200mV
19	RET VIDEO IN (G)			
20	VTR SAVE	SAVE : 4.5 ±0.5V STBY: $9^{+1}_{-0.5}$V Zo≦10KΩ	→	
21	NC	——		——
22	COLOR FRAMING	5 ± 1V	→	Zi≧100KΩ
23	NC	——		——
24	NC	——		——
A	POWER SENSE IN		←	min. 11V Max. 17V
B	UNREG GND			

PB ADAPTOR CONNECTOR (20P)

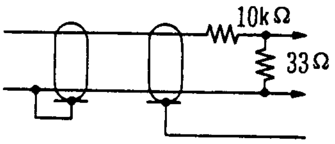
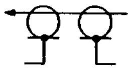
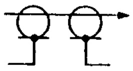
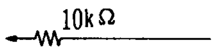
No.	SIGNAL	VTR	DIRECTION	PB ADAPTOR
1	Y-RF (X)	75 Ω (OXIDE=0.1 Vp-p) METAL=0.2 Vp-p (Center Carrier)		Z = 75Ω
2	Y-RF (G)			
20	C-RF (X)	75 Ω (OXIDE=0.1 Vp-p) METAL=0.2 Vp-p (Center Carrier)		Z = 75Ω
19	C-RF (G)			
3	AUDIO CH1 (X)	LOW Impedance −10 dBu		Z = 10 kΩ
5	AUDIO CH2 (X)			
4	AUDIO (G)			
16	Y SW PULSE (X)	1,3 CH : H 2,4 CH : L OPEN COLLECTOR		Z = 10 kΩ , Pull up +5 V
18	ADVANCE SYNC (X)	Z = 75Ω		2 ± 0.5 Vp-p, 75Ω
15	ADVANCE SYNC (G)			
6	CONTROL SIG. 1	METAL "H" FF/REW "M" OXIDE "L" H = 5.0 V M = 2.5 V L = 0 V	—	High impedance
17	CONTROL SIG. 2	PLAY : HIGH (> 6.5 V) Z = 10 kΩ	—	Z = 57 kΩ
9	VIDEO (X)			Z = 75Ω 1 Vp-p
10	VIDEO (G)			
7	GND		—	
8	GND		—	
13	+12 V		—	
14	+12 V		—	
12	C SW PULSE (X)	1,3 CH : L 2,4 CH : H (0.3V) EMITTER FOLLOWER (OPEN)		Z = 75Ω
11	C SW PULSE (G)			

LENS CONNECTOR (12P)

No.	SIGNAL	SPECIFICATION
1	L:PB CONT	ENABLE: 0 V, DISABLE: +5 V or OPEN
2	L:VTR START/STOP	TRIG: 0 V⌉_⌈5 Vp-p
3	UNREG GND	GND
4	AUTO +5V	AUTO: +5 V, MANU:0 V or OPEN
5	IRIS CONT	+3.4 V (F16) to +6.2 V (F2.8)
6	UNREG +12V	+11 V to +17 V
7	IRIS POS	+3.4 V (F16) to +6.2 V (F2.8)
8	REMOTE/LOCAL	REMOTE MODE: +4.6 V, LOCAL MODE: 0 V
9	EXTENDER ON/OFF	ON:0 V, OFF: +4.6 V or OPEN
10	NC	——
11	NC	——
12	NC	——

PB ADAPTOR CONNECTOR (20P)

- When the unit is connected with the BVW-35/35P/25/25P by the optional connection cable CCRZ-5.

No.	SIGNAL	REMARKS FOR SIGNAL	DIRECTION	BVW-35/35P/ 25/25P 26 PIN No.
1	W35 REC / ALARM IN	0V, +2.5V, +5Vdc	←	15
20	W35 START / STOP	START: 4.5 Vdc STOP: 0Vdc	→	12
3	AUDIO CH1 (X) OUT	Output -10dBu		9 10 11
4	AUDIO CH1 (G) OUT			
18	RETURN VIDEO (X) IN	1.0Vp-p, 75Ω		18
15	RETURN VIDEO (G) IN			19
9	VIDEO OUT (X)	1.0Vp-p, 75Ω		1
10	VIDEO OUT (G)			2
7	GND			B
8	GND			
12	INTERFACE SENCE	UNREG +12V IN		A

1-3. CONNECTION CONNECTOR

When external cables are connected to the various connectors on the connector panel during maintenance, the hardware listed below (or equivalents) must be used.

Panel Indication	Connection connector
AUDIO IN	1-508-084-00 CONNECTOR, XLR, 3P, MALE
DC IN	1-508-362-00 PLUG, XLR, 4P, FEMALE
TC IN/OUT	1-560-069-11 PLUG, BNC, MALE
GENLOCK VIDEO IN	1-560-069-11 PLUG, BNC, MALE
VIDEO OUT	1-560-069-11 PLUG, BNC, MALE
PB ADAPTOR	1-566-771-11 PLUG, 20P MALE
MIC IN	1-508-084-00 CONNECTOR, XLR, 3P MALE
REMOTE	1-560-078-00 CONNECTOR, 6P, MALE
DC OUT	1-565-654-11 CONNECTOR, ROUND TYPE 4P
EXT VTR (OPTION: BKW-402)	1-564-184-21 PLUG, CONNECTOR (SOCKET) 26P, FEMALE

1-4. SETTING OF THE SYSTEM SELECT CIRCUIT

Along with the select switches and controls on the side panel, some internal system select circuits are on the circuit boards.

- **TC-48A/48AP Board**

(1) SL7
Set the condition to TC generator is put into the power save mode.
When the battery is disconnected, TC generator is put into the power save mode: SL7 is opened.
When the POWER switch is turned OFF, TC generator is put into the power save mode: SL7 is shorted.
When the unit is shipped, SL7 is opened.

(2) SL8
Selects whether the color frame flag should be set or not, when the color frame flag is locked.
Set the color frame flag : SL8 is opened.
Does not set the color frame flag : SL8 is shorted.
When the unit is shipped, SL8 is opened.

(3) SL10, SL11
Selects the power supply while TC is power save mode.
UNSW +12V : SL10 is shorted, SL11 is opened,
(TC generator : ON)
UNREG +12V : SL10 is opened, SL11 is shorted.
(TC generator : OFF)
When the unit is shipped, SL10 is shorted.

(4) S517 SLAVE U-BIT INT/EXT SW
Selects whether the U-bit is slaved by internal or external, when locking the slave.
When the unit is shipped, this switch is set to the INT position.

(5) S518 REAL TIME VITC/LTC SW
Selects whether the real time is recorded on the VITC or the LTC.
When the unit is shipped, this switch is set to the VITC position.

(6) S103, S203 LIMITER ON/OFF SW
When turned OFF, audio level limiter is released.
S103: CH-1
S203: CH-2
When the unit is shipped, these switches are set to the ON posiotion.

- **SY-117C/117CP Board**

(1) S1 SLACK MUTE SW
When turned ON, detection of the slack is muted. Normally set to the OFF position.
When the unit is shipped, this switch is set of the OFF position.

- **VA-104 Board**

(1) S1 GAIN SELECT SW
By setting the GAIN selector (side panel) to "18", the video output level can be raised by 18 dB or 24 dB with this switch. (Refer to Sec. 1-5.)
In case of changed this switch, be sure to perform the +18 dB Black Set Adjustment for R, G and B video signals respectively.
When the unit is shipped, this switch is set to the 18 dB position.

(2) [π] OFFSET ADJ (S2)
Adjusts the resolution. See SECTION 4 ADJUSTMENT REQUIREMENTS for more information.

- **IE-30/30P Board**

(1) S1 DTL ON/OFF SW
Selects whether the detail signal which generated from the IE-30/P board for resolution improvement should be added to the video signal or not.
Turn ON this switch : add the detail signal.
When the unit is shipped, this switch is set to the ON position.

- **IE-31 Board**

(1) APERTURE ON/OFF (S2)
This switch is used to turn ON or OFF the aperture circuit.
The circuit does not work with this switch set to OFF.
The switch is factory-set to ON.

- **PR-176/176U Board, PR-177, PR-178**

(1) S1, S2, S3 R γ, G γ, B γ
When turned ON, the gamma correction is performed so that the overall characteristic of signals between camera and monitor is "γ=1". Normally set to the ON positions.
When the unit is shipped, these switches are set to the ON position.

(2) S5 WHITE CLIP & KNEE ON/OFF SW
When turned OFF, the white clipping and knee correction are automatically released. This switch is used for the video circuit adjustment. Normally set to the ON positions.
When the unit is shipped, these switches are set to the ON position.

(3) S4 MASK ON/OFF SW
When turned ON, LINEAR MATRIX MASKING is turned ON and obtain the high saturated color appearance.
If need require, set to the ON position.
When the unit is shipped, this switch is set to the OFF position for UC model, on the other hand, set to the ON position for EK model.

- **EN-79U/79P Board**

(1) S1, S2 R-Y ON/OFF, B-Y ON/OFF SW
When turned ON, the R-Y and/or B-Y signal is added to the each encoder circuit. These switches are used for the encoder circuit adjustment. Normally set to the ON positions.
When the unit is shipped, these switches are set to the ON positions.

(2) S3 Y/G SELECT SW
When set to the G position, all the Y signal is changed to G signal.
And at same time, "MONITOR MODE" is displayed on the Viewfinder.
This switch is used for the camera block adjustment.
Normally set to the ENC position.
When the unit is shipped, this switch is set to the ENC position.

- **SG-152/152AP Board, SG-157/157P Board**

(1) S1 V BLKG SELECT SW (UC only)
Adjusts the vertical blanking width.
When the unit is shipped, this switch is set to "20H"

(2) S2 H BLKG SELECT SW
Adjusts the horizontal blanking width.
When the unit is shipped, this switch is set to be these levels:

UC	10.9 ± 0.2μs
EK	12.0 ± 0.2μs

(3) S3 TEST SAW SW
When turned ON, the lens is forcibly closed and the TEST SAW waveform is added to the video signal circuit.
This switch is used for the video circuit adjustment.
Normally set to the OFF position.
When the unit is shipped, this switch is set to the OFF position.

(4) EXT SC 0/180 (S4/SG-157/P)
This switch turns SC (subcarrier) phase of the output signal in GENLOCK mode, If adjustment is not completed by EXT SC VR, set this switch to the opposite position to setting position.
When the unit is shipped, this switch is set to the 0 position.

- **AT-49B Board**

(1) BATTERY WARNING SELECT, FP INH SW (S1)

BATTERY WARNING SELECT (S1-2)
When this switch is turned ON in the use of an Anton Bauer intelligent battery system and the battery remaining amount drops below 20%, a warning is displayed on the VF.
When OFF and the amount drops below 10%, the warning is displayed on the VF.
When the unit is shipped, the switch is set to OFF.

FP INH (S1-1)
When set to the OFF (OPEN) position, the white balance compensation values for each filter can be stored in the memory A and memory B independently. Then 8 adjusted values; 4 for the memory A and 4 for the memory B can be stored. When set to the ON position, only 2 compensation values; one for memory A and one for memory B can be stored. In this case, the compensation values will not correspond to the selection of the color temperature conversion filter. According to the selection of WHITE BAL switch (on the side panel), the white balance compensation values are stored and read out from the memory A and memory B.
When the unit is shipped, this switch is set to the OFF position.

(2) MEMORY RESET SW (S2)
Use for the compensation data stored in the microcomputer can be reset. When set to the RESET position, indicates "MEMORY RESET" in the Viewfinder and resets the compensation data.
After confirm this indication, set this switch to the OPERATE position.
When the unit is shipped, this switch is set to the OPERATE position.

- **IF-298A Board**

(1) VTR MODE (EXT ONLY/PARALLEL) (S1)
This switch is effective when the external VTR is connected with BKW-402 (option) or S2 is set to ON.
When you select PARALLEL, both built-in VTR of the BVW-400A/400AP and external VTR connected through the BKW-402 operate and enable simultaneous recording.
If you select EXT ONLY, only the external VTR operates.
Normally, This switch is set to PARALLEL.

(2) 26P INTERFACE (S2)
Normally, the interface circuit operates automatically when an external VTR is connected through the 26-pin connector; the circuit does not operate if the external VTR is not connected (The power saving circuit of IF board will activate). If this switch is set to ON, however, the interface circuit operates and a signal is output from 26-pin connector even when the external VTR is not connected.
Normally, this switch is set to OFF.

(3) CENTER MARKER ON/OFF (S3)
When this switch is set to ON, you can use the viewfinder MARKER switch to display the CENTER MARKER on the viewfinder.
Normally, this switch is set to ON.

(4) SAFETY ZONE ON/OFF (S4)
When this switch is set to ON, you can use the viewfinder MARKER switch to display the SAFETY ZONE on the viewfinder.
Normally, this switch is set to ON.

(5) SAFETY ZONE 80/90% (S5)
Selects the range of the SAFETY ZONE to either 80% or 90% when S4 (SAFETY ZONE) is set to ON.
Normally, this switch is set to 90%.

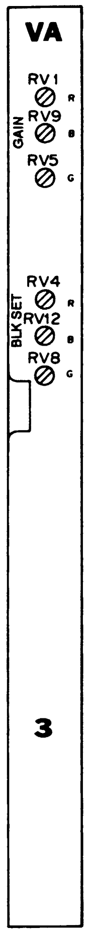
(6) EXT VTR INDEPENDENT ON/OFF (S6)
Usually, the external VTR is controlled by the VTR START/STOP switch of the BVW-400A/400AP. When this switch is set to ON, the external VTR can be controlled independently by itself. Normally, this switch is set to OFF.

(7) MARKER ON (S7)
Unlike regular viewfinders, the 3" or 5" viewfinder does not have the marker ON/OFF switch on the viewfinder. Set the MARKER ON to ON to have the marker appear in the viewfinder when the 3" or 5" viewfinder is used.

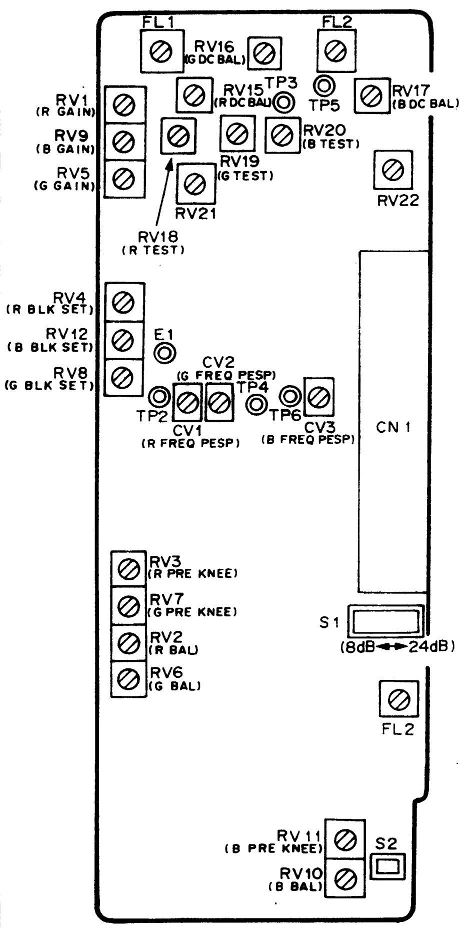
(8) N/P (S8)
The mode of the marker generator can be set either to NTSC or PAL.

1-6. LEVEL CHECK SHEET

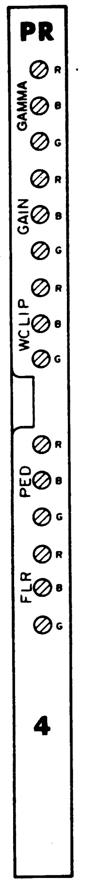
1. Adjust the iris control so that the video level at CN1-8/VA-104 board is 0.275 ± 0.01 Vp-p.
2. Adjust the RV5(G GAIN)/VA-104 board so that the video level at CN1-45/PR-176/U board is 0.5 ± 0.01 Vp-p.
3. Adjust the RV1 (R GAIN)/VA-104 board so that the video level at CN1-41/PR-176/U board is 0.5 ± 0.01 Vp-p.
4. Adjust the RV9 (B GAIN)/VA-104 board so that the video level at CN1-43/PR-176/U board is 0.5 ± 0.01 Vp-p.
5. Set the S3 (TEST SAW)/SG-152/AP board to the ON position.
6. Adjust the RV19 (G TEST)/VA-104 board so that the video level at CN1-45/PR-176/U board is 0.5 ± 0.01 Vp-p.
7. Adjust the RV18 (R TEST)/VA-104 board so that the video level at CN1-41/PR-176/U board is 0.5 ± 0.01 Vp-p.
8. Adjust the RV20 (B TEST)/VA-104 board so that the video level at CN1-43/PR-176/U board is 0.5 ± 0.01 Vp-p.
9. Adjust the RV21 (G GAIN1)/PR-176/U board so that the video level at the TP2/PR-176 board is 2.00 ± 0.01 Vp-p.
10. Adjust the RV1 (R GAIN1)/PR-176/U board so that the video level at the TP1/PR-176/U board is 2.00 ± 0.01 Vp-p.
11. Adjust the RV25 (B GAIN1)/PR-176/U board so that the video level at the TP3/PR-176/U board is 2.00 ± 0.01 Vp-p.
12. Turn OFF the S2 (Gγ)/PR-176/U board and adjust the RV16 (G GAIN)/PR-176/U board so that the video level at the CN1-42/EN-79U/P board is 0.7 ± 0.01 Vp-p.
13. Turn OFF the S1 (Rγ)/PR-176/U board and adjust the RV15 (R GAIN)/PR-176/U board so that the video level at the CN1-43/EN-79U/P board is 0.7 ± 0.01 Vp-p.
14. Turn OFF the S3 (Bγ)/PR-176/U board and adjust the RV17 (B GAIN)/PR-176/U board so that the video level at the CN1-41/EN-79U/P board is 0.7 ± 0.01 Vp-p.
15. Turn ON the S2 (Gγ)/PR-176/U board and adjust the RV24 (Gγ BAL)/PR-176/U board so that the video level at the CN1-42/EN-79U/P board is 0.7 ± 0.01 Vp-p.
16. Turn ON the S1 (Rγ)/PR-176/U board and adjust the RV38 (Rγ BAL)/PR-176/U board so that the video level at the CN1-43/EN-79U/P board is 0.7 ± 0.01 Vp-p.
17. Turn ON the S3 (Bγ)/PR-176/U board and adjust the RV29 (Bγ BAL)/PR-176/U board so that the video level at the CN1-41/EN-79U/P board is 0.7 ± 0.01 Vp-p.


VA
RV1
RV9
RV5
GAIN
RV4
RV12
RV8
BLK SET
3

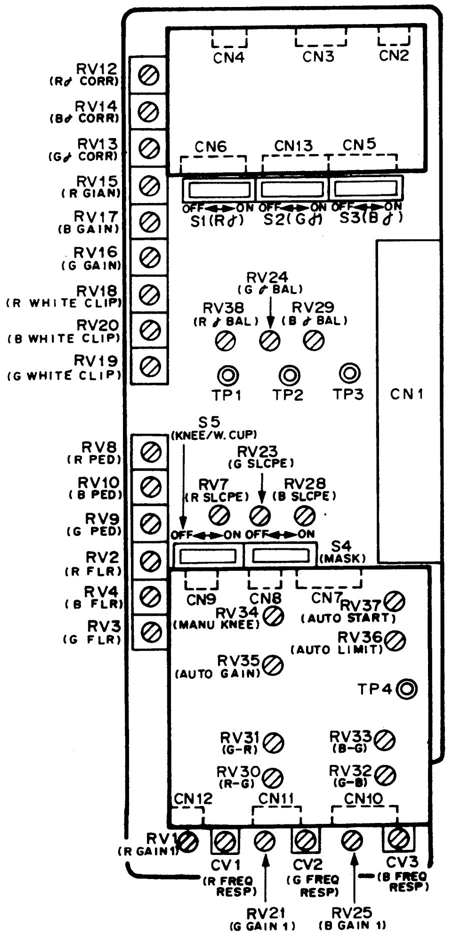
VA-104 BOARD (PANEL SIDE)


FL1
FL2
RV16 (G DC BAL)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV18 (R TEST)
RV22
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1 (8dB↔24dB)
FL2
RV11 (B PRE KNEE)
RV10 (B BAL)
S2

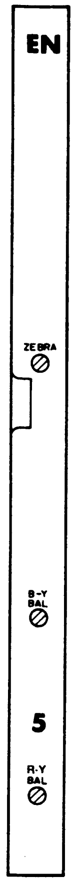
VA-104 BOARD (COMPONENT SIDE)


PR
GAMMA
GAIN
WCLIP
PED
FLR
4

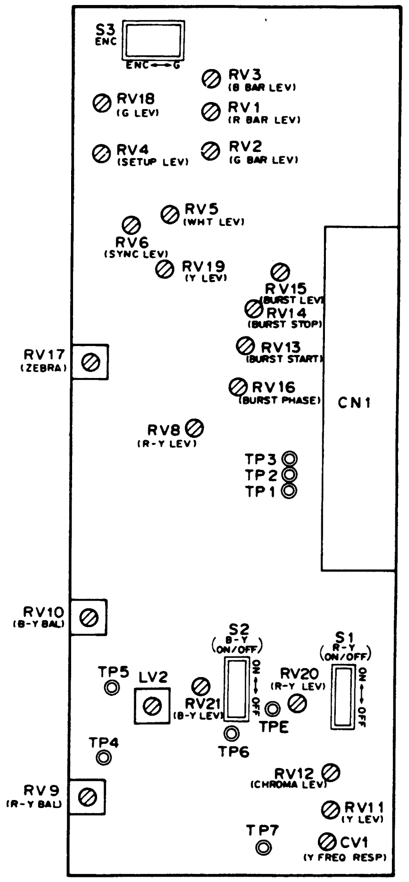
PR-176/U BOARD (PANEL SIDE)


RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN4 CN3 CN2
CN6 CN13 CN5
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (Gγ BAL)
RV38 (Rγ BAL)
RV29 (Bγ BAL)
TP1 TP2 TP3
CN1
S5 (KNEE/W.CLIP)
RV23 (G SLCPE)
RV7 (R SLCPE)
RV28 (B SLCPE)
S4 (MASK)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN9 CN8 CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12 CN11 CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

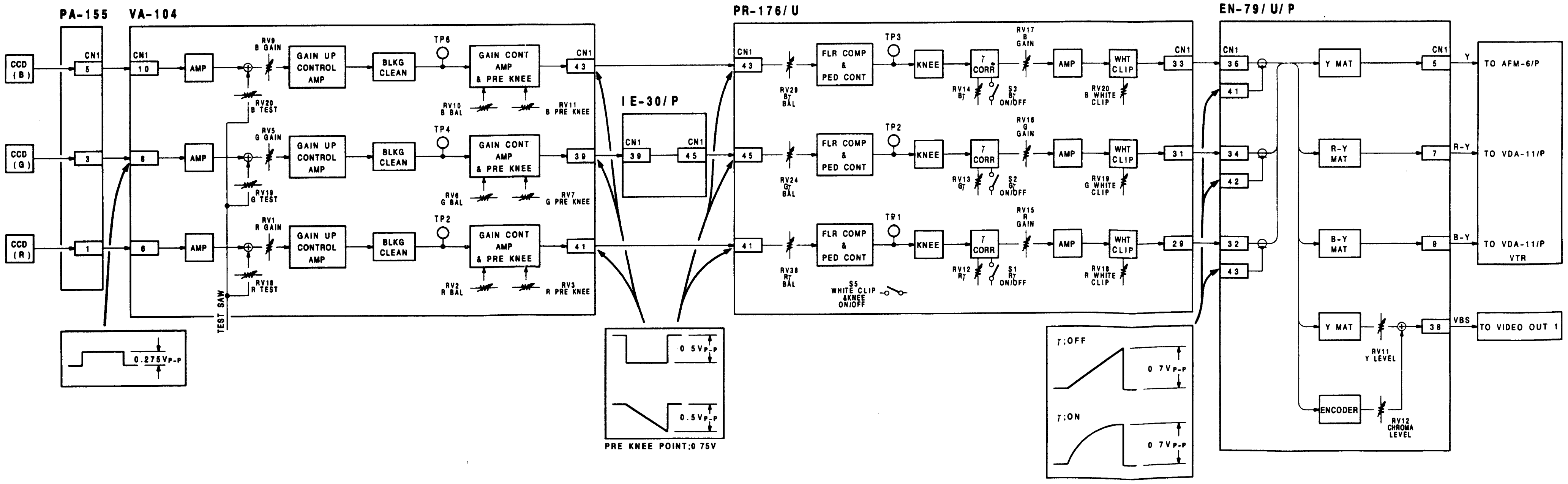
PR-176/U BOARD (COMPONENT SIDE)


EN
ZEBRA
B-Y BAL
5
R-Y BAL

EN-79U/P BOARD (PANEL SIDE)


S3 ENC
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV4 (SETUP LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV13 (BURST START)
RV16 (BURST PHASE)
RV17 (ZEBRA)
CN1
RV8 (R-Y LEV)
TP3 TP2 TP1
RV10 (B-Y BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5 LV2
RV20 (R-Y LEV)
RV21 (B-Y LEV)
TPE
TP4
TP6
RV12 (CHROMA LEV)
RV9 (R-Y BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79U/P BOARD (COMPONENT SIDE)


PA-155
VA-104
CCD (B)
CCD (G)
CCD (R)
CN1
AMP
GAIN UP CONTROL AMP
BLKG CLEAN
GAIN CONT AMP & PRE KNEE
RV9 B GAIN
RV20 B TEST
RV5 G GAIN
RV19 G TEST
RV1 R GAIN
RV18 R TEST
TEST SAW
TP6
TP4
TP2
RV10 B BAL
RV11 B PRE KNEE
RV6 G BAL
RV7 G PRE KNEE
RV2 R BAL
RV3 R PRE KNEE
0.275Vp-p
IE-30/P
PR-176/U
FLR COMP & PED CONT
KNEE
γ CORR
AMP
WHT CLIP
TP3
TP2
TP1
RV17 B GAIN
RV16 G GAIN
RV15 R GAIN
RV29 Bγ BAL
RV24 Gγ BAL
RV38 Rγ BAL
RV14 Bγ
RV13 Gγ
RV12 Rγ
S3 Bγ ON/OFF
S2 Gγ ON/OFF
S1 Rγ ON/OFF
RV20 B WHITE CLIP
RV19 G WHITE CLIP
RV18 R WHITE CLIP
S5 WHITE CLIP &KNEE ON/OFF
0.5Vp-p
PRE KNEE POINT:0.75V
γ:OFF
γ:ON
0.7Vp-p
EN-79/U/P
Y MAT
R-Y MAT
B-Y MAT
ENCODER
RV11 Y LEVEL
RV12 CHROMA LEVEL
Y
R-Y
B-Y
VBS
TO AFM-6/P
TO VDA-11/P
TO VDA-11/P VTR
TO VIDEO OUT 1

- **SW-562 Board**

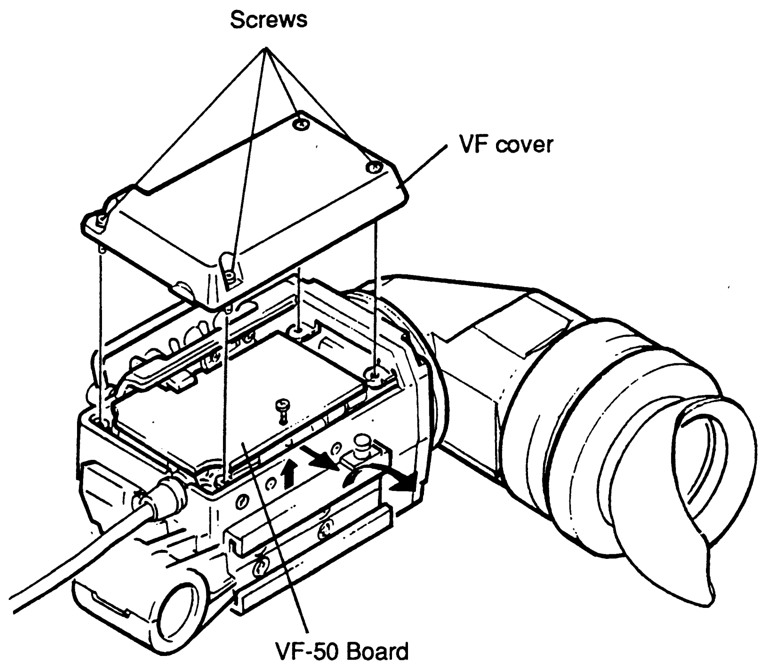
(1) SL1, SL2

By shorting SL1 or SL2, two indications ZEBRA and CENTER MARKER can be displayed at the same time on the viewfinder screen.

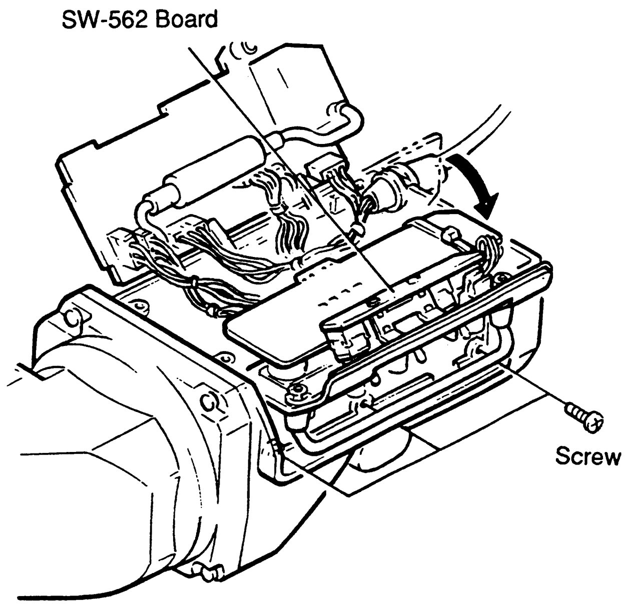
ZEBRA/MARKER SW	NORMAL	SL1 SHORT	SL2 SHORT
ZEBRA ON	ZEBRA	ZEBRA	ZEBRA + MARKER
OFF	OFF	OFF	OFF
MARKER ON	MARKER	MARKER + ZEBRA	MARKER

- **Modification procedure**

1. Loosen four screws and remove the VF cover.
2. Remove the screw securing the VF-50 board and open the VF-32 board in the direction of arrow.



3. Remove three screws securing the switch panel and open the panel.
4. Solder and short SL1 or SL2 on the SW-562 board.



1-5. GAIN CHANGES

The gains of 0-9-18 dB can be selected with the GAIN selector (on the side panel). But the video output level can be raised by 24 dB at the 18 dB position of GAIN selector.
Therefore the following two types gain can be set.

0-9-18 dB
and
0-9-24 dB

- **Changing from 18 dB into 24 dB**

By setting the S1 (GAIN SELECT SW) on the VA-104 board to the 24 dB position, the video output level can be raised by 24 dB at the 18 dB position of GAIN selector (on the side panel).
When this switch is changed; 18 dB to 24 dB or 24 dB to 18 dB, be sure to perform the +18 dB Black Set Adjustment. (Refer to Sec. 7-4-10)

1-7. DIAGNOSTIC MODE

BVW-400A/400AP is provided with a diagnostic function. This function displays on the viewfinder and the LCD display on the side panel.
The LCD display also displays the hours meter, and more, battery before end voltage adjustment can also perform on this LCD display.

1-7-1. Operation

1. Put the unit into STOP mode.
2. Press the DIAGNOSTIC switch on the side panel with a pencil lead or similar object and put into DIAGNOSTIC mode.
   Display on the monitor as follows.

- SELF DIAG. –
START

↓

HOURS METER
DISPLAY

(MODE "0", Hours meter is displayed on the LCD display.)

3. Press the ADVANCE button on the side panel, and shift the mode step by step.
4. Press the SHIFT button and perform the mode.
5. When this DIAGNOSTIC mode is ended, press the DIAGNOSTIC switch again.

– SELF DIAG. –
END

1-7-2. Mode Table

MODE	ITEM/CONTENTS
0	HOURS METER • DRUM RUNNING METER • TAPE RUNNING METER • OPERATION METER It is recommended to perform the periodic checks and maintenance based on the hours meter. (Refer to Sec. 2-2)
1	Display and setting of battery before end voltage Display the voltage of battery before end and can be changed. (Refer to Sec. 1-14)
2	LCD display check Check that LCD display's 7 segments are all turned on or off, all lights is put out or not by pressing the SHIFT button.
3	EEPROM check Check that EEPROM on the TC-48A/P board is activated normally, and TC-48A/P circuit is operated normally. Press the SHIFT button and displayed on the LCD display as follows. • EEPROM : OK 3-0 • EEPROM : NG 3-E When EEPROM is not activated normally, check the TC-48A/P circuit or replace the EEPROM.
4	Diagnostic of CAMERA system Not mounted for BVW-400A/400AP. Press the ADVANCE button and proceed onto the next step.
5	Diagnostic of VTR system (1) • Function key interface check • Function lamp check
6	Diagnostic of VTR system (2) • Photo interruptor check
7	Diagnostic of VTR system (3) • Photo interruptor check • Tape beginning sensor check • Tape end sensor check
8	Diagnostic of VTR system (4) • Drum rotation check • Capstan rotation check • Reel FG (take-up side) check • Reel FG (supply side) check

1-7-3. Self Diagnostic Function

VTR system

If a result of the diagnostic is different from one in the following table, check the circuit as the following procedure.

1. Install the EX-148 extension board in place of the SY-117C/P board. (Never connect the SY-117C/P board.)
2. Short between TP5/EX-148 board and TP1(GND)/EX-148 board with a shorting clip.
3. Check whether the signal described in the following table is appeared or not at TP6 and TP7 by shorting between TP8, TP9, TP10 and TP1(GND).
   TP6: IC202-14/MB-317/P
   TP7: IC201-14/MB-317/P

○: Short to TP1

TP8	TP9	TP10	TP6	MODE	TP7	MODE
○	○	○	$\overline{\text{METAL}}$ / OXIDE	7	H: CASSE IN	6
○	○		H: OX REC OK	7	H: METAL REC OK	7
○		○	L: RETURN KEY	5	L: CASSE LOCK	6
○			(VTR STBY / $\overline{\text{SAVE}}$ SW)		(L: TC READY)	
	○	○	(H: RFALARM)		(L: CAM READY)	
	○		L: EJECT KEY	5	(L: SV READY)	
		○	L: FF KEY	5	L: STOP KEY	5
			L: REW KEY	5	L: PLAY KEY	5

4. When the signal is appeared as described in the above table, the SY-117C/P board has a trouble.

   When the signal is not appeared as described in the table, check a related circuite as following procedure.
   (1) Remove the all plug in printed circuit boards including the CD-89 board.
   Then install the EX-148 extension board in the position of the SY-117C/P board.
   (2) Short between TP5/EX-148 board and TP1(GND)/EX-148 board, TP50(+5V)/EX-148 board and TP508/TC-48A/P board with shorting clips. Make sure that the SL10/TC-48A/P board is shorted, SL11 is opened.
   (3) Install the Battery or use the AC adaptor. Turn OFF the POWER switch.
   (4) Check a related circuit.
   (NOTE) • Within a few seconds, check a relate circuit.
   • After the check is completed, remove the shorting clips rapidly.

The circuit is normal when measuring as following.

- Photointerrupter (Ref. No. PD)
  H : more than 0.6 V at collector
  L : less than 0.3 V at collector
- Transistor
  H : more than 4 V at collector
  L : 0 V at collector

- VTR System-1

Procedure	LCD display	VF screen	Related circuit
Press the ADVANCE button so that the MODE "5" is displayed.	5	VTR DIAG MODE-1 FUNCTION KEY/LAMP CHECK	
Press the SHIFT button.	5	PUSH FF KEY	
Press the F FWD button.	5	PUSH FF KEY OK ↓ PUSH REW KEY	S2, CN1-6/KY-124→CN59-6/MB-317/P →IC202-7/MB-317/P
Press the REW button.	5	PUSH REW KEY OK ↓ PUSH PLAY KEY	S4, CN1-4/KY-124→CN59-4/MB-317/P →IC202-9/MB-317/P

(NOTE) If "OK" is displayed without pressing the appointed button, check a related circuit.

Procedure	LCD display	VF screen	Related circuit
Press the PLAY button.	5	PUSH PLAY KEY OK ↓ PUSH STOP KEY	S3, CN1-3/KY-124→CN59-3/MB-317/P →IC201-9/MB-317/P
Press the STOP button.	5	PUSH STOP KEY OK ↓ PUSH EJECT KEY	S1, CN1-7/KY-124→CN59-7/MB-317/P →IC201-7/MB-317/P
Press the EJECT button.	5	PUSH EJECT KEY OK ↓ PUSH START KEY	S5, CN1-5/KY-124→CN59-5/MB-317/P →IC202-6/MB-317/P

Procedure	LCD display	VF screen	Related circuit
Press the START button.	5	PUSH START KEY OK ↓ PUSH RETURN KEY	Connect the SY-117C/P board to the EX-148 board CN58-A3/MB-317/P→CN1-48/SY-117C/P
Press the RETURN button. Check that the following lamps are turned on. • REC TALLY (Viewfinder) • BATTERY INDICATOR (Viewfinder) • TALLY • PLAY • F FWD • REW • WARNING	5	PUSH RETURN KEY OK ↓ FUNCTION LAMP ALL ON PUSH ADVANCE	CN58-B3/MB-317/P→IC202-3/MB-317/P Check for continuity • PLAY lamp IC1-3/AU-97/P→CN10-12/MB-317/P →CN59-10/MB-317/P→CN1-10/KY-124 • F FWD lamp IC1-1/AU-97/P→CN10-14/MB-317/P →CN59-8/MB-317/P→CN1-8/KY-124 • REW lamp IC1-2/AU-97/P→CN10-13/MB-317/P →CN59-9/MB-317/P→CN1-9/KY-124

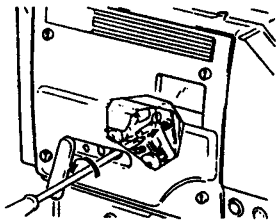
Procedure	LCD display	VF screen	Related circuit
Press the ADVANCE button so that the MODE "6" is displayed.	6	VTR DIAG MODE-2 PHOTO INT. CHECK-1	
Press the SHIFT button.	6	ROTATE CAM GEAR POSITION A C-IN SW I C-LCK SW L	
Turn the gear by the phillips type screwdriver into the hole for the gear.  Confirm that the display on the VF screen is changed as described in the table-1 in the next page by turning the gear.	6	ROTATE CAM GEAR POSITION C-IN SW C-LCK SW	• C-IN SW PD34-3/MB-317/P→Q34-C/MB-317/P →IC201-1/MB-317/P • C-LCK SW PD31-3/MB-317/P→Q31-C/MB-317/P →IC201-3/MB-317/P

Table-1

POSITION	C-IN SW	C-LCK SW	MODE	CODE
1	O	O	BO	0001
2	O	O	EJECT	0011
3	O	O	B1	0010
4	O	L	STBY	0110
5	O	L	B2	0111
6	O	L	LOAD	0101
7	I	L	B3	0100
8	I	L	FF/REW	1100
9	I	L	B4	1101
A	I	L	STOP	1111
B	I	L	B5	1110
C	I	L	FWD	1010
D	I	L	B6	1011
E	I	L	REV	1001
F	I	L	B7	1000

- [C-IN SW] O:OUT I:IN
  When the cassette is not inserted, "0" is always displayed.

- [C-LCK SW] O:OPEN L:LOCK

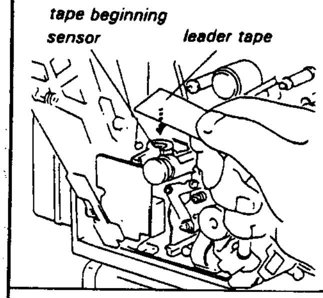
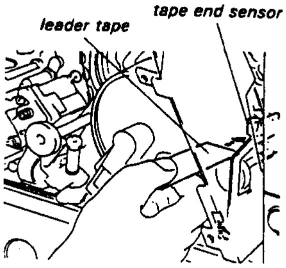
- [CODE]
  Remove the mechanical deck block and extend it by the Extension Harness which is prepared for service.

BIT-3	(4)/SR-40→CN1-8/TB-5→CN44-8/MB-317/P→CN1-36/SY-117C/P
BIT-2	(3)/SR-40→CN1-9/TB-5→CN44-9/MB-317/P→CN1-37/SY-117C/P
BIT-1	(2)/SR-40→CN1-10/TB-5→CN44-10/MB-317/P→CN1-38/SY-117C/P
BIT-0	(1)/SR-40→CN1-11/TB-5→CN44-11/MB-317/P→CN1-39/SY-117C/P

- VTR system-3

This mode should be performed after setting POSITION to "8" in MODE "6".

Procedure	LCD display	VF screen	Related circuit
Press the ADVANCE button so that the MODE "7" is displayed.	7	VTR DIAG MODE-3 PHOTO INT. CHECK-2	
Press the SHIFT button.	7	PUSH SENS SW M/O M M-REC D O-REC D NEXT-PLAY	
Press the METAL/OXIDE switch. (This switch detects an oxide and "0" is displayed.)	7	PUSH SENS SW M/O 0 M-REC D O-REC D NEXT-PLAY	PD33-3/MB-317/P→Q33-C/MB-317/P →IC202-1/MB-317/P
Press the METAL MISS REC switch. ("E" of enable is displayed.)	7	PUSH SENS SW M/O M M-REC E O-REC D NEXT-PLAY	PD32-3/MB-317/P→Q32-C/MB-317/P →IC201-2/MB-317/P
Press the OXIDE MISS REC switch. ("E" of enable is displayed.)	7	PUSH SENS SW M/O M M-REC D O-REC E NEXT-PLAY	PD35-3/MB-317/P→Q35-C/MB-317/P →IC202-2/MB-317/P
Press the PLAY BUTTON.	7	TAPE TOP/END CHECK TOP	

Procedure	LCD display	VF screen	Related circuit
Close the leader tape such as a piece of aluminium with the tape beginning sensor. (The tape beginning is detected and "DET" is displayed on the VF screen.)  	7	TAPE TOP/END CHECK TOP DET ↓ TAPE TOP/END CHECK TOP DET END	Short between TP47/EX-148 board and TP50 (+5V) /EX-148 board with a shorting clip. After making sure that the CN in the parentheses is "H", check the following points. Normally, the points are "H", when closing the leader tape, the points are "L". IC1-3/FE-4(IC1-1 "H") CN43-4/MB-317/P(CN43-5 "H") CN1-46/SY-117C/P(CN1-47 "H")
Close the leader tape such as a piece of aluminium with the tape end sensor. (The tape end is detected and "DET" is displayed on the VF screen.)  	7	TAPE TOP/END CHECK TOP DET END DET TAPE TOP/END CHECK TOP DET END DET PUSH ADVANCE	Short between TP47/EX-148 board and TP1 (GND) /EX-148 board with a shorting clip. After making sure that the CN is the parentheses is "H", check the following points. Normally the points are "H", when closing the leader tape, the points are "L". IC1-3/FE-4(IC1-1 "H") CN43-4/MB-317/P(CN43-5 "L") CN1-46/SY-117C/P(CN1-47 "L")

- VTR system-4

This mode should be performed after setting POSITION to "8" in MODE "6".

Procedure	LCD display	VF screen	Related circuit
Press the ADVANCE button so that the MODE "8" is displayed.	8	VTR DIAG MODE-4 DRUM/CAP MOTOR ON	
Press the SHIFT button.	8	DRUM ON OK ↓ DRUM ON OK NEXT-PLAY	• When "NG" is displayed. Refer to fig. 1. (Page. 1-31)
Press the PLAY button.	8	CAP F-ON T-RL FG ↓ CAP F-ON OK T-RL FG OK NEXT-PLAY	When "NG" is displayed. • CAP F-ON Refer to fig. 2. (Page. 1-32) • T-RL FG PD37-4/MB-317/P→Q37-C/MB-317/P →CN1-3/SY-117C/P

Procedure	LCD display	VF screen	Related circuit
Press the PLAY button.	8	CAP R-ON S-RL FG ↓ CAP R-ON OK S-RL FG OK PUSH ADVANCE	When "NG" is displayed. • CAP R-ON Refer to fig. 2. (Page. 1-32) • S-RL FG PD36-4/MB-317/P→Q36-C/MB-317/P →CN1-4/SY-117C/P
Press the ADVANCE button and the MODE "0" is displayed.	0	HOURS METER DISPLAY	

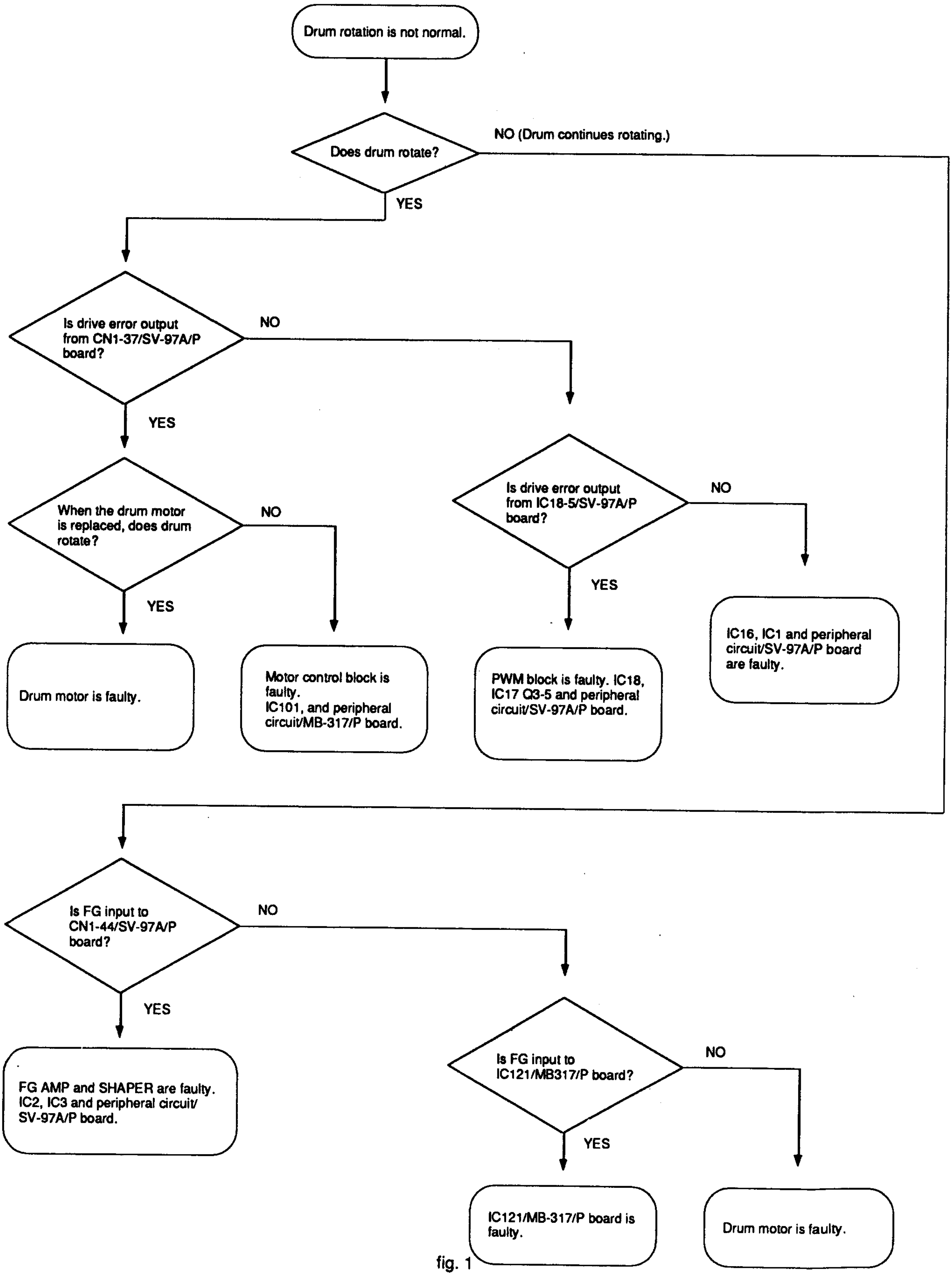

Drum rotation is not normal.
Does drum rotate?
NO (Drum continues rotating.)
YES
Is drive error output from CN1-37/SV-97A/P board?
NO
YES
When the drum motor is replaced, does drum rotate?
NO
YES
Drum motor is faulty.
Motor control block is faulty. IC101, and peripheral circuit/MB-317/P board.
Is drive error output from IC18-5/SV-97A/P board?
NO
YES
PWM block is faulty. IC18, IC17 Q3-5 and peripheral circuit/SV-97A/P board.
IC16, IC1 and peripheral circuit/SV-97A/P board are faulty.
Is FG input to CN1-44/SV-97A/P board?
NO
YES
FG AMP and SHAPER are faulty. IC2, IC3 and peripheral circuit/ SV-97A/P board.
Is FG input to IC121/MB317/P board?
NO
YES
IC121/MB-317/P board is faulty.
Drum motor is faulty.

fig. 1

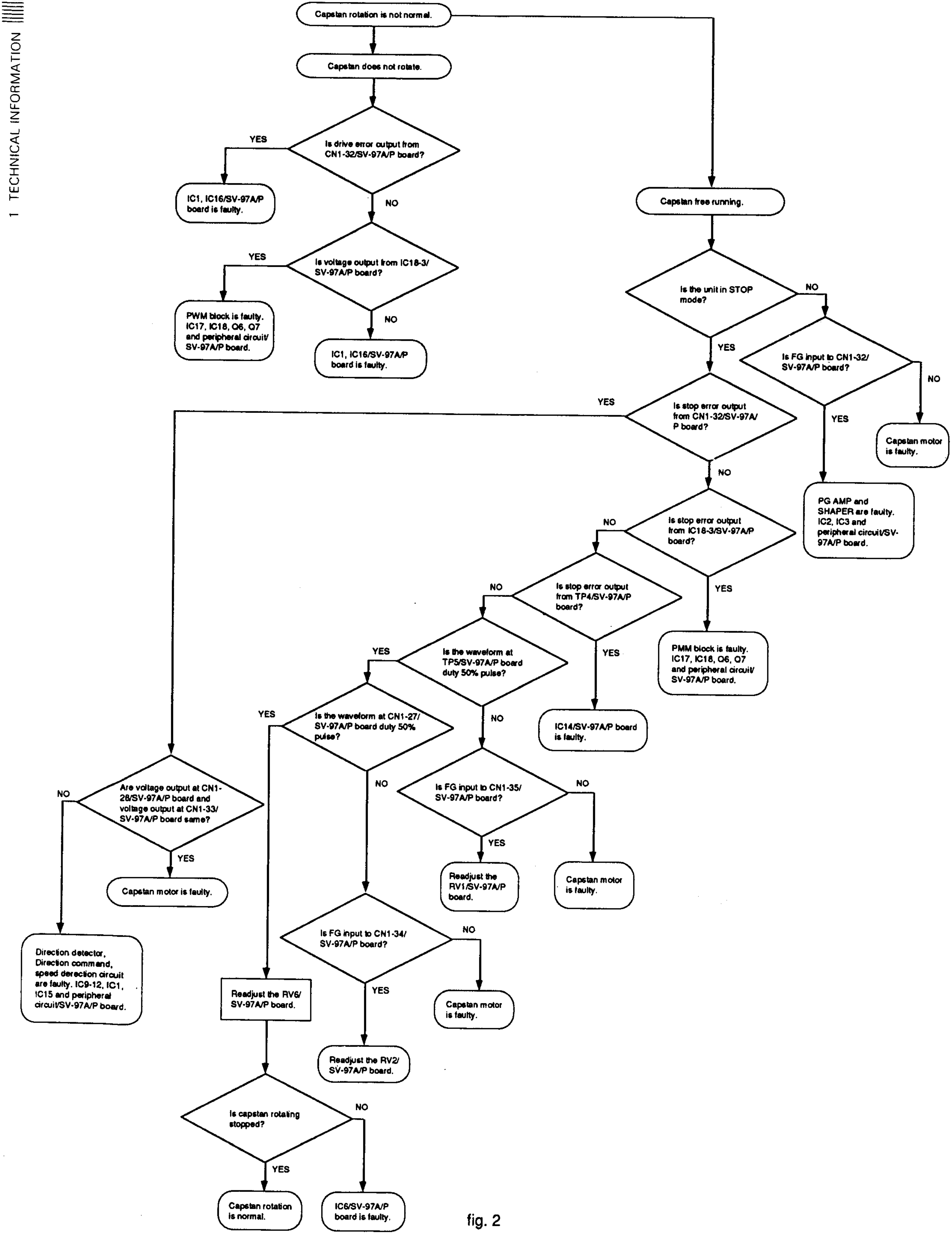
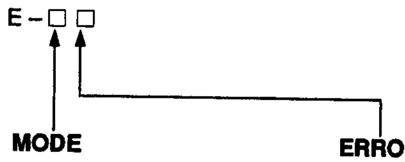

Capstan rotation is not normal.
Capstan does not rotate.
Is drive error output from CN1-32/SV-97A/P board?
YES
IC1, IC16/SV-97A/P board is faulty.
NO
Is voltage output from IC18-3/SV-97A/P board?
YES
PWM block is faulty. IC17, IC18, Q6, Q7 and peripheral circuit/SV-97A/P board.
NO
IC1, IC16/SV-97A/P board is faulty.
Capstan free running.
Is the unit in STOP mode?
NO
Is FG input to CN1-32/SV-97A/P board?
NO
Capstan motor is faulty.
YES
PG AMP and SHAPER are faulty. IC2, IC3 and peripheral circuit/SV-97A/P board.
YES
Is stop error output from CN1-32/SV-97A/P board?
YES
NO
Is stop error output from IC18-3/SV-97A/P board?
YES
PMM block is faulty. IC17, IC18, Q6, Q7 and peripheral circuit/SV-97A/P board.
NO
Is stop error output from TP4/SV-97A/P board?
YES
IC14/SV-97A/P board is faulty.
NO
Is the waveform at TP5/SV-97A/P board duty 50% pulse?
NO
Is FG input to CN1-35/SV-97A/P board?
YES
Readjust the RV1/SV-97A/P board.
NO
Capstan motor is faulty.
YES
Is the waveform at CN1-27/SV-97A/P board duty 50% pulse?
NO
Is FG input to CN1-34/SV-97A/P board?
YES
Readjust the RV2/SV-97A/P board.
NO
Capstan motor is faulty.
YES
Readjust the RV6/SV-97A/P board.
Is capstan rotating stopped?
YES
Capstan rotation is normal.
NO
IC6/SV-97A/P board is faulty.
Are voltage output at CN1-28/SV-97A/P board and voltage output at CN1-33/SV-97A/P board same?
YES
Capstan motor is faulty.
NO
Direction detector, Direction command, speed derection circuit are faulty. IC9-12, IC1, IC15 and peripheral circuit/SV-97A/P board.

fig. 2

1-8. ERROR INFORMATION

1-8-1. Error Code Display

When the tape is slackened in the unit, its error cause and its error mode are displayed on the LCD Display.



MODE
0 : STOP
1 : REC
2 : THREAD / UNTHREAD
3 : REC PAUSE
6 : FF
A : REW
C : PLAY

ERROR CAUSE
1: REEL
2 : ROTOR
3 : THREAD MOTOR
4 : DRUM
5 : CAPSTAN

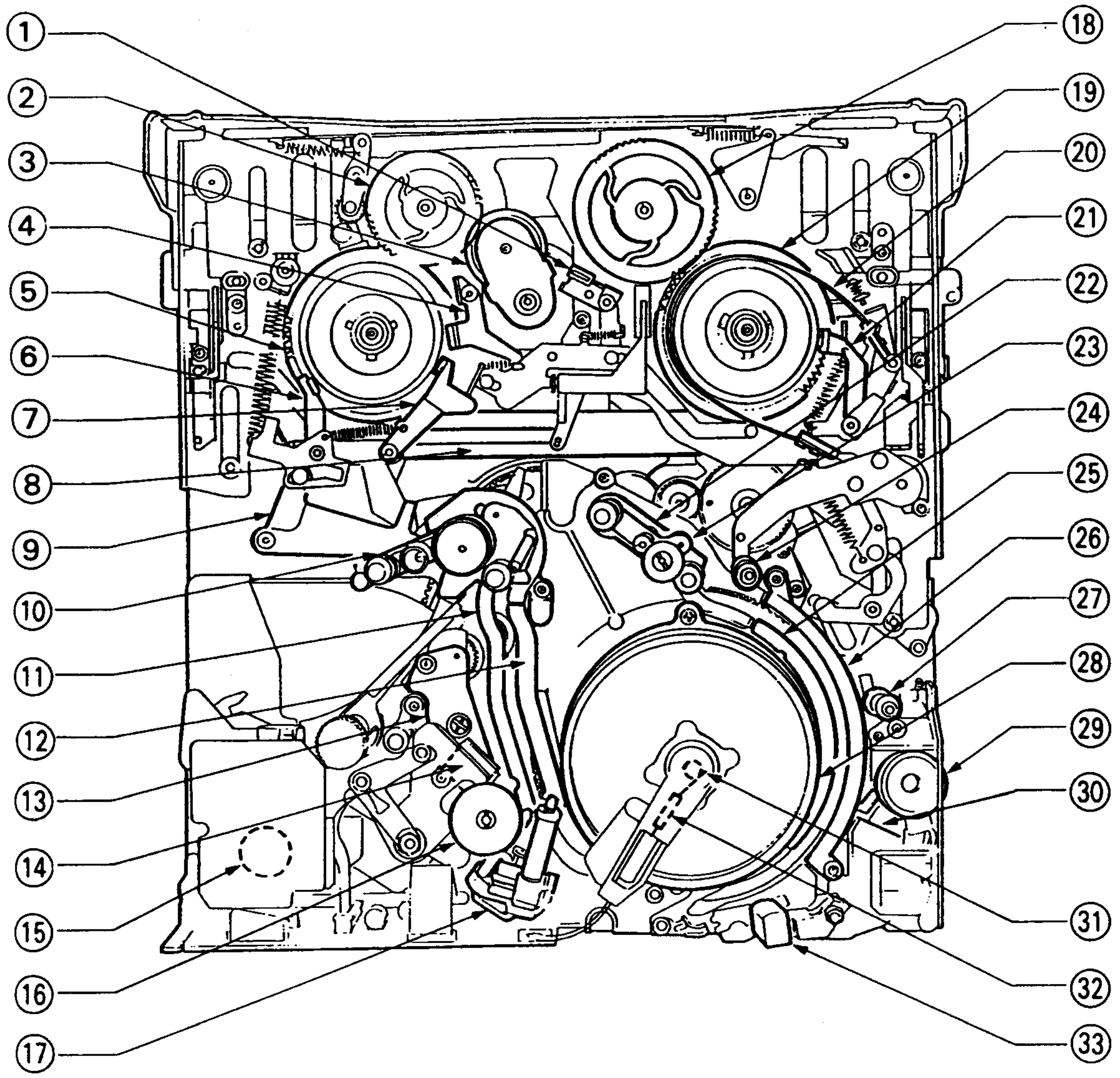
1-8-2. Error Information

If errors are detected when the power is turned on, the following warnings will be displayed.

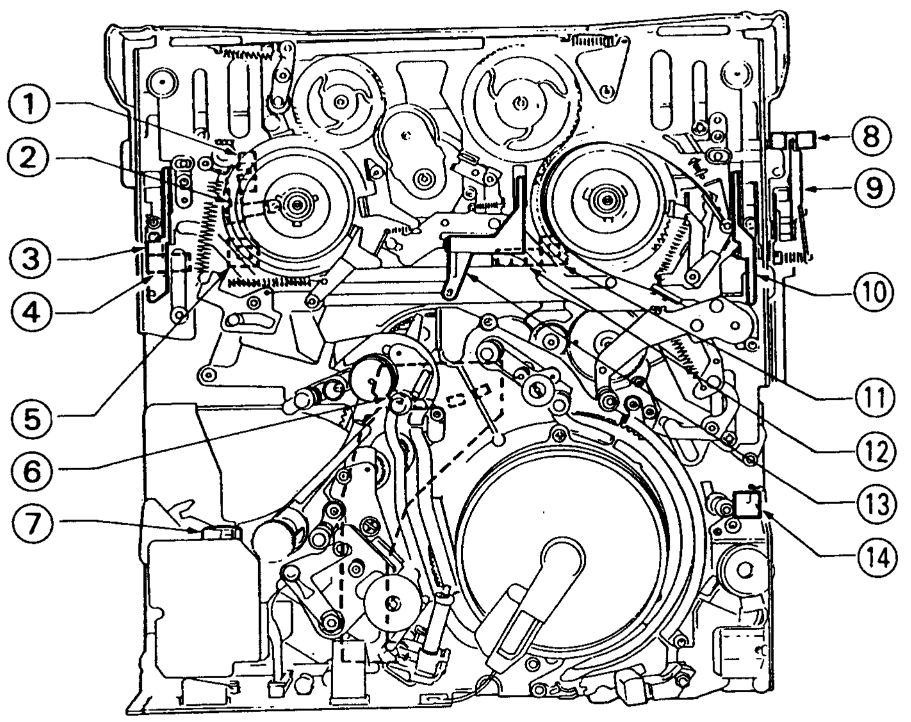
Warning	Problem	Correction
Warning lamp lights up. Alarm sounds continuously. "SERVO" is displayed on the LCD. REC tally lamp blinks at a 4 Hz period.	An error was detected in the communication between the system controller CPU and servo MPU when the power was turned on.	Check the communication path between the SY board and SV board. The boards may have been disconnected, etc.
WARNING lamp blinks at a 2 Hz period.	An error was detected in the communication between the system controller CPU and TC MPU when the power was turned on.	Check the communication path between the SY board and TC board. The boards may have been disconnected, etc.
"EE-00" is displayed for 20 sec. at the TIME CODE part of the LCD.	An error was detected in the communication between the TC MPU and NOVRAM when the power was turned on.	Check the communication path between the MPU and NOVRAM on the TC board. The NOVRAM (IC515) may have been miss inserted, etc.

1-9. LOCATION OF MAIN PARTS

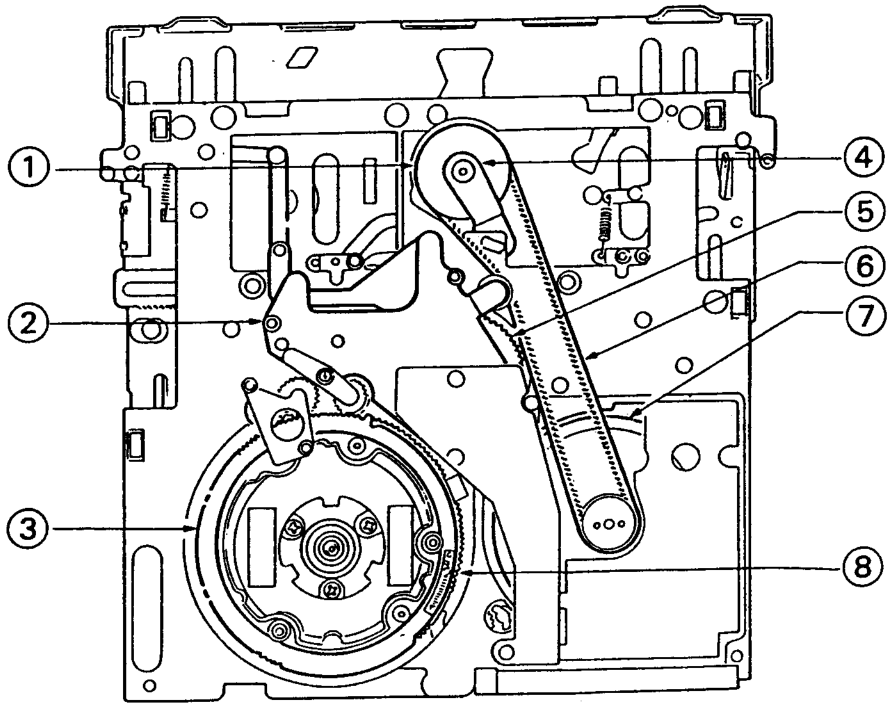
1-9-1. Location of the Mechanical Main Parts / Components



1 Supply Side Main Brake
2 Take-up Side Idler
3 Gear
4 Take-up Side Main Brake
5 Take-up Side Reel Table
6 Take-up Side Sub Soft Brake
7 Take-up Side Soft Brake
8 Reel Slider
9 Main Pinch Arm
10 Sub-pinch Arm
11 Take-up Side Rail (O)
12 Take-up Side Rail (I)
13 Threading Gear
14 Audio/TC Confi Head
15 Threading Motor
16 IR-3
17 Take-up Side Sub-base
18 Supply Side Idler
19 Supply Side Reel Table
20 Tension Regulator Band
21 Supply Side Soft Brake
22 Supply Side Base
23 Supply Side Sub-base
24 Tension Regulator.
25 Supply Side Rail (O)
26 Supply Side Rail (I)
27 TG-1
28 Drum
29 IR-1
30 Full Erase Head
31 Slip Ring
32 Brush
33 CTL Head

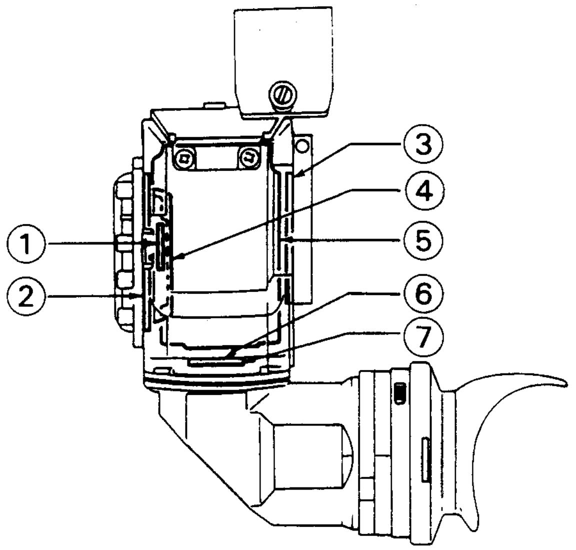


1 Cassette Detection Sensor
2 Cassette Detection Shutter
3 Miss-REC Lever A
4 Miss-REC Sensor
5 Take-up Reel Rotation Detector
6 Mechanical Function Control Sensor
7 Tape Beginning Sensor
8 Cassette-up Compartment Lock Sensor
9 Lock Arm
10 Miss-REC Lever B
11 Supply Reel Rotation Detector
12 Metal/Oxide Selector
13 Metal Detection Lever
14 Tape End Sensor

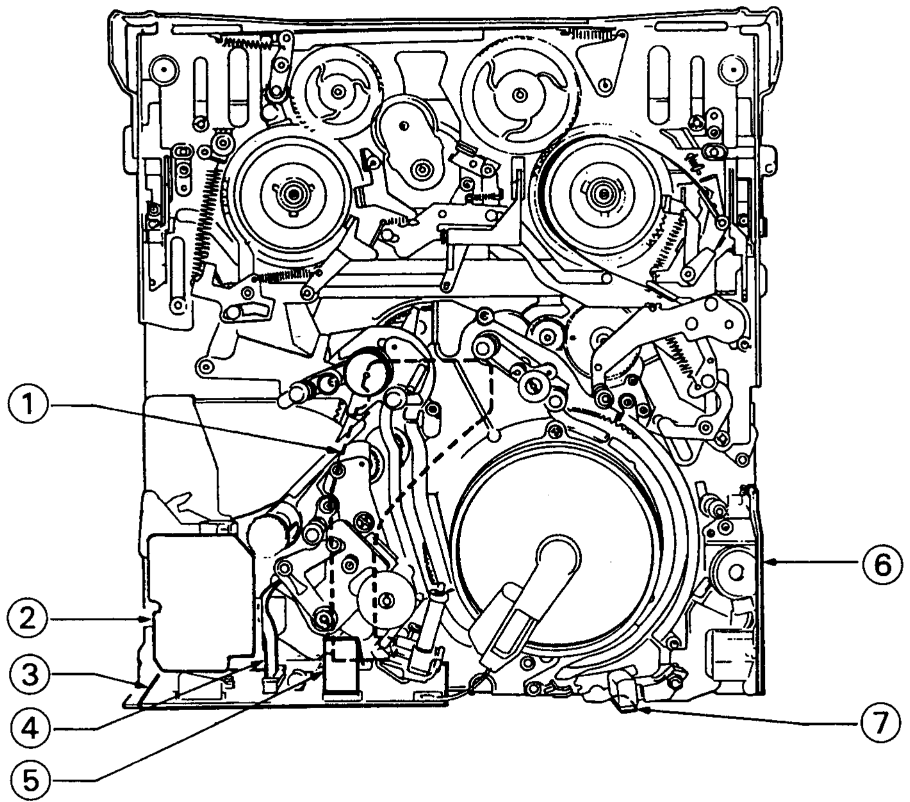


1 Relay Pulley
2 Cam Gear Base
3 Threading Ring T
4 Gear Base
5 Function Cam
6 Timing Belt
7 Capstan
8 Threading Ring S

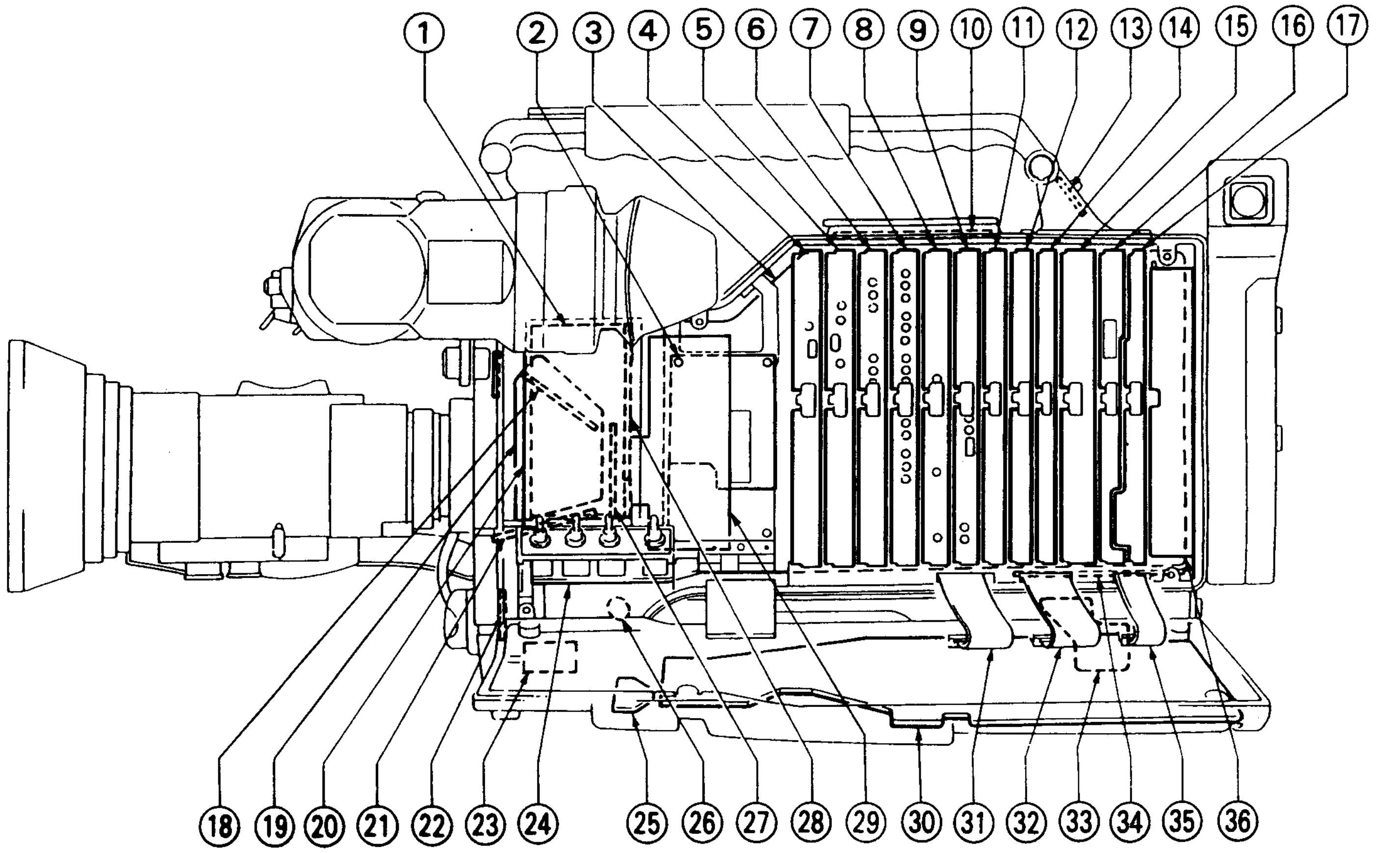
1-9-2. Location of the Printed Circuit Boards



1	LP-66 Board
2	VR-149 Board
3	CN-771 Board
4	SW-562 Board
5	VF-50 Board
6	LP-64 Board
7	LP-65 Board



1	SR-40 Board	5	FL-53 Board
2	LD-21 Board	6	FE-4 Board
3	TB-5 Board	7	DUS-246 Board
4	FL-55/P Board		



1	PA-155 Board	13	SW-291 Board	25	VR-70 Board
2	IF-298A Board	14	AFM-6/6P Board	26	VR-77 Board
3	MB-317/317P Board	15	AU-97/97P Board	27	BI-29/69 * Board
4	AT-49B Board	16	SV-97A Board	28	TG-119/119P Board
5	IE-30/30P Board, IE-31 Board	17	SY-117C Board	29	TG-120 Board
6	VA-104 Board	18	BI-31/71* Board	30	TC-48A Board
7	PR-176/176U Board	19	CN-803 Board	31	FL-45 Board
8	EN-79/79U Board	20	DR-124 Board	32	FL-46 Board
9	SG-152/152AP Board	21	BI-30/70* Board	33	CN-400 Board
10	KY-124 Board	22	SW-357B Board	34	PS-162 Board
11	VP-24/24P Board	23	DC-DC CONVERTER UNIT	35	FL-57 Board
12	VDA-11/11P Board	24	SW-220 Board	36	CD-89 DC-DC CONVERTER

* BI-29/30/31 boards
Serial No. 10001 thru 10027
40001 thru 40031
BI-69/70/71 boards
Serial No. 10028 and higher
40032 and higher

1-10. PRINTED CIRCUIT BOARDS

SYSTEM	CIRCUIT BOARD	CIRCUIT FUNCTION
CAMERA	CN-803	Connector PCB for BI boards
	BI-29/69 BI-30/70 BI-31/71	CCD mount
	TG-119/119P	Timing Generator
	TG-120	Sub Timing Generator (1)
	TG-121	Sub Timing Generator (2)
	PA-155	Pre-amp (Sample & Hold)
	DR-124	CCD Driver
	VA-104	Video Amp, Black Set, Total Gain Change, Shading Compensator
	IE-30/30P IE-31	Image Enhancer Aperture
	PR-176/176U PR-177 PR-178	Gamma, Masking, Knee, Slope, W. Clip, Dynamic Contrast Control
	EN-79U/79P	Y/R-Y/B-Y Signal Generator for VTR, Encoder, Color Bars Generator
	SG-152/152AP SG-157/157P	Sync Generator, Genlock, Sub-regulator
	AT-49B	Auto White/black Function, VF Character Generator, System Controler, Audio Level Detector
	SW-220	SAVE-STBY, Color Bars ON/OFF, DCC ON/OFF, Memory A/B/Preset SW
	SW-357B	Auto White/Black SW VTR Start/Stop SW Shutter ON/OFF Select
	VR-77	Master Black VR
	IF-298A	26P Interface, Logic, VF Marker Gen.
	CN-400	Connector PCB for IF-298A

SYSTEM	CIRCUIT BOARD	CIRCUIT FUNCTION
VIDEO	VDA-11/11P	CTDM and C-Modulator
	AFM-6/6P	Y-Modulator, AFM
	VP-24/24P	Video Playback, Head Select Pulse Generator
AUDIO	AU-97/97P	Audio REC/PB Processor
	TB-5	Terminal Board, Audio Confi PB
	FL-55/55P	Audio Head AMP, Relay Board for TB and A/T Head
SERVO	SV-97A/97P	Drum/Capstan Servo
SYSTEM CONTROL	SY-117C/117P	System Control
	KY-124	Function Key Board
TIME CODE	TC-48A/48P	Time Code Generator, Audio Level Control, Audio Monitor AMP, SW and Indicator for Audio and TC
	HP-43	Head Phone
	VR-70	Volume
POWER	PS-162	Power Distributor
SENSOR	FE-4	Full Erase, Dew and End Sensor
	LD-21	Loading Motor Driver and END Sensor
	SR-40	Mechanical Position Sensor

SYSTEM	CIRCUIT BOARD	CIRCUIT FUNCTION
OTHERS	MB-317/P	Mother Board
	SW-291	Back Tally
	FL-45	Relay Board for MB and TC
	FL-46	Relay Board for MB and TC
	FL-53	Relay Board for TB and SR
	FL-57	Relay Board for PS and TC
	EX-148	Extension Board

SYSTEM	CIRCUIT BOARD	CIRCUIT FUNCTION
VIEW-FINDER	VF-50	Drive and Video Amp for Viewfinder, Peaking Signal Generator
	LP-64	REC LED
	LP-65	Front Tally LED
	LP-66	BATT/VTR SAVE LED
	VR-149	Contrast, Bright, Peaking, Audio Level (CH-1) VR
	SW-562	Tally ON/OFF, Audio Level Indicator ON/OFF, Zebra/Marker ON/OFF SW
	CN-771	Connector for VF Cable

1-11. CIRCUIT DESCRIPTION

1-11-1. Camera System Circuit

(1) CCD CONTROL SYSTEM (TG-119/P, TG-120, DR-124, *BI-69, 70, 71 and PA-155 Boards)

- TG-119/119P Board

It sends the pulse for driving the CCD to DR-124 board and the pulse for sampling the video signal output from the CCD to PA-155 board. Driving pulse synchronizes with the synchronizing signal sent from SG-152/AP board.
14.32 MHz counted down from 28.64 MHz is also supplied to SG-152 board. (for UC model)
14.1875 MHz counted down from 28.375 MHz is also supplied to SG-152AP board. (for EK model)

- DR-124 Board

It converts the driving pulse sent from TG-91/P board so as to drive the CCD directly. Converted pulse is sent to BI-29, 30, 31 board and transmitted to the CCD.
The regulator circuit generates +29V by +15V

- BI-69, 70, 71 Boards*

CCD is mounted in this board. Driving pulse and DC control voltage are added to the CCD.
The video signal output from the CCD is sent through the emitter follower to PA-155 board.

- PA-155 Board

It eliminates the pulse component of the video signal sent from BI-29, 30, 31 boards. Then the signal processings such as the amplification by preamplifier are performed on the board, then the video signal is sent to VA-104 board.

* BI-29/30/31 boards
Serial No. 10001 thru 10027
40001 thru 40031
BI-69/70/71 boards
Serial No. 10028 and higher
40032 and higher

(2) VIDEO SIGNAL SYSTEM (VA-104, IE-30/P, IE-31 Board, PR-176/U and EN-79U/P Boards)

- VA-104 Board

It amplifies the video signal sent from PA-155 board and processes the black shading correction, gain-up control, blanking cleaning and white shading correction. It also selects the video signal or TEST SAW signal.

- IE-30/30P, Board

It generates the detail signal obtained from G and R video signals so as to improve resolution. The detail signal is sent to PR-132 A/U board, then added to R, G and B video signals. G video signal is delayed by 1H, then sent to PR-132A/U board.

- PR-176/176U Board

The masking signal and detail signal are added to R, G and B video signals respectively and the flare compensation, pedestal control, knee correction, white clipping and gamma correction are performed on the board.
Then the video signal is sent to EN-79U/P board.

- EN-79U/79P Board

It generates the luminance (Y) signal, color difference (R-Y, B-Y) signals and composite video (VBS) signal obtained from R, G and B video signals. It also supplies the SMPTE color-bar signals without I, Q signals for UC model, EBU color bar signals for EK model.

(3) POWER SUPPLY SYSTEM (CD-89 DC-DC converter)

- CD-89

CD-89 switching regulator generates the voltages of +9.0 Vdc and −9.0 Vdc, +5 Vdc and -5 Vdc and SW'D +6V for the respective boards from the externally supplied unregulated DC power.
It also supplies voltages for the viewfinder (+9.3V) and for CCD control (+15V, +7V) and for microphone (+48V).
SW'D +6V, +20V, +6.5V and +48V are ON or OFF by the system control signal according to various modes respectively.

(4) SYNCHRONIZING SIGNAL SYSTEM (SG-152/AP Board)

- SG-152A/152AP Board

It generates various synchronizing signals.
It detects the external genlock signal automatically and synchronizes with it.
Then, it contains the auto iris circuit that controls the iris by detecting the video signal level at any time, the regulator circuit generates +8.5V, +4.6V, −4.5V sent the video signal system, and the regulator circuit generates +4.7V for the CCD control system by +9V, +5V, −5V supplied from CD-89.

(5) AUTOMATIC CONTROL SYSTEM (AT-49B Board)

- AT-49B Board

Microcomputer unit on the AT-49B board sends to the control signal and compensation signal to appropriate boards in accordance with the selection of function switches.
It also detects the position of color temperature conversion filter, pedestal control and video level automatically, then compensates the video signals and displays various warnings.
Besides it contains the interface circuit with remote control unit RM-P3 (optional) and the level detection circuit to display the audio level.

(6) INTERFACE SYSTEM (IF-298A Board)

- IF-298A board

The IF-298A board mainly consists of three blocks: the 26-pin interface block, logic block for external VTR REC START/STOP control, and VF MARKER GEN. block.

1-12. FUNCTION OF THE SENSORS

(1) Miss-REC Switch (for metal particle tape)
This is a record-proof switch for metal particle tape.

(2) Miss-REC Switch (for oxide tape)
This is a record-proof switch for oxide tape.

(3) Oxide/Metal Particle Tape Detection Switch
This switch detects whether an oxide tape or a metal particle tape is being used.

(4) Cassette-in Switch
This switch detects whether a cassette is being inserted.

(5) Cassette-up Compartment Lock Switch
This switch detects that the Cassette-up Compartment is locked.
When the Cassette-up Compartment is locked, threading is perfomed.
When EJECT mode, the Cassette-up Compartment is opened, the EJECT mode is finished.

(6) Cam Position Sensor
This sensor detects whether the Cam is moved to the designed position or not.

(7) Temperature Detection Sensor
This sensor detets the temperature and then Black correction is performed.

1-13. USE UNDER SPECIAL ENVIRONMENT (MEASURE FOR COLD AREA)

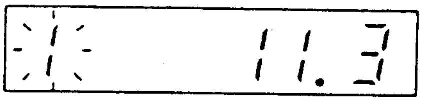
The BVW-400A/400AP is guaranteed its operation under the temperature of 0°C to 40°C.
When the unit is used under 0°C, cover-cloth against the cold (LKW-200) is recommended.

1-14. VOLTAGE CHANGING OF BATTERY BEFORE END

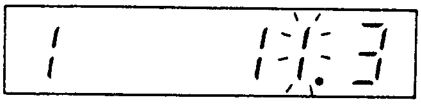
Voltage of battery before end can be changed by the following procedures described below.
Setting available range : 11.0 V to 13.0 V
Setting available minimum unit : 0.1 V
When the unit is shipped, this is set to 11.30V.

1. Press the DIAGNOSTIC switch on the side panel, and put into the DIAGNOSTIC mode.
   (Refer to Sec.1-7)

2. Press the ADVANCE button on the side panel, so that set the MODE "1".
   Then, the voltage of battery before end is displayed on the LCD-display.

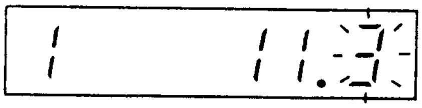


3. Press the SHIFT button on the side panel so that blinking the first digit.



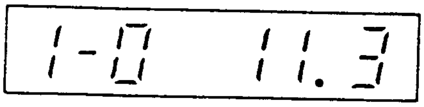
4. Set the desired figure pressing the ADVANCE button.

5. Press the SHIFT button so that blinking the decimal digit.

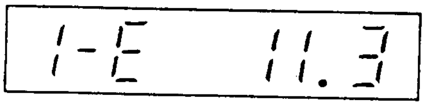


6. Set the desired figure pressing the ADVANCE button.

7. Press the SHIFT button. Then the desired voltage is stored in the ROM.
   If the value is stored in the ROM, "O" is displayed automatically.



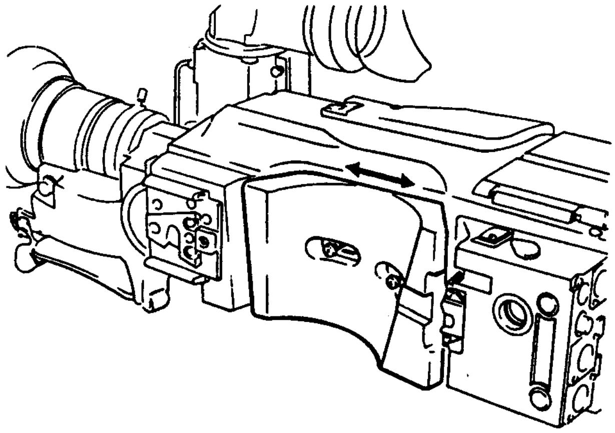
If the value can be not stored in the ROM because of the error, display the following.



In this case, press the ADVANCE button and then repeat the above procedures.

1-15. RELOCATING THE SHOULDER PAD

Loosen the two fixing screws in the figure and relocate the shoulder pad to the desired position. Then tighten the screws. Can be moved ±10 mm back and forth



1-16. REMOTE CONTROL OF THE CAMERA SYSTEM

The camera system of the BVW-400A/400AP can be remote controlled with the remote control unit RM-P3 (optional).
Connect a REMOTE connector of the BVW-400A/400AP to a REMOTE connector of the RM-P3 with a cable. The remote cable can extend a maximum of 100m.
When RM-P3 is disconnected from the unit with turning ON the POWER switch, the unit maintains the REMOTE mode. Therefore, the GAIN selector and so on of the unit are not functioned.
Turn OFF the POWER switch, and turn ON again, the REMOTE mode is released.
In this case, MASTER PED and WHITE BAL data and so on are not remained setting by the RM-P3.

1-17. SUPPLIED ACCESSORIES

Supplied BVW-400A/400AP accessories are as follows.

(1) Shoulder strap
(2) Extension board (EX-148)
(3) Rain cover
(4) Tripod adaptor (VCT-14)
(5) Microphone
(6) Carrying case (LC-201)....EK Only
(7) Operation manual.
Maintenance manual vol-1, vol-2

1-18. OPTIONAL ACCESSORIES

The followings are the accessories. Use the suitable accessory according to the need.

- AC Power Adaptor : AC-500 (UC), AC-500CE (EK)

The VTR can be driven by an AC power source from the AC adaptor, AC-500/500CE. The AC-500/500CE is worldwide type of adaptor. AC-500/500CE can be used with 100 / 120 / 220 / 240V commercial power supplies just by setting the voltage selector to the appropriate position for a stable supply of DC power.

- Remote Control Unit : RM-P3

The camera system of the BVW-400A/400AP can be remote controlled by connecting a REMOTE connector of the BVW-400A/400AP to a REMOTE connector of the RM-P3 with a cable. The remote cable can extend a maximum of 100m.

- Battery Pack : NP-1B, NP-1A, BP-90A, BP-90

They are the chargeable 12V battery pack. NP-1B's capacity is 2.3 Ah, that of the NP-1A is 1.7 Ah, and that of the BP-90A is 5.0 Ah and that of the BP-90 is 3.5 Ah.

- Battery Charger : BC-1WA, BC-1WB, BC-210/210CE, BC-410/410CE

The BC-1WB battery charger is designed to charge NP-1B/1A battery packs. Four NP-1B/1A battery packs can be inserted at one time, and will be charged in sequence automatically. The BC-210/210CE battery charger is designed to charge BP-90A/90 battery packs. Four BP-90A/90 battery packs can be inserted and charged at one time automatically.
BC-410 is a 8 series battery charger designed to connect four NP-1/1A/1B battery packs, and four BP-90A/90 battery packs (total of eight batteries) simultaneously, and charges them one by one.

- Battery Adaptor : DC-500, DC-520, DC-210

The battery case, DC-500 is for the battery pack, BP-90A/90, DC-520 can insert the two NP-1B/1A with the standard battery case.
DC-500 can be replaced for the standard battery case supplied the BVW-400A/400AP.

- Wireless Microphone System
  UHF portable tuner : WRR-27
  UHF portable tuner : WRR-28L
  UHF transmitter : WRT-27

The audio sound can be recorded on the tape without wire cable by using these wireless microphone system.

- Playback Adaptor : VA-500/500CE

Connect the VA-500 with the BVW-400A/400AP, the color playback picture can be obtained. Either the composite signal or the VHF RF signal can be output.

- VF rotate bracket : BKW-401

The BKW-401 is a rotating housing mechanism for the VF of the Betacam camera. The range of rotation is from the horizontal position (operating condition) to 90°. It also provides the existing front and rear sliding mechanism.

- VTR connector unit : BKW-402

This kit is used to connect the BVW-400A/400AP to the BVW-35/35P/25/25P portable video cassette recorder using the CCZ 26-pin cable. This arrangement enables simultaneous recording using the built-in VTR and external VTR by component signal.

- Camera grip : CAC-GR01

When this grip is attached to the camera, you can have functions such as START/STOP recording, REC REVIEW, and ZOOM at your fingertips.
Only the 12-pin connector standard lens can be used.

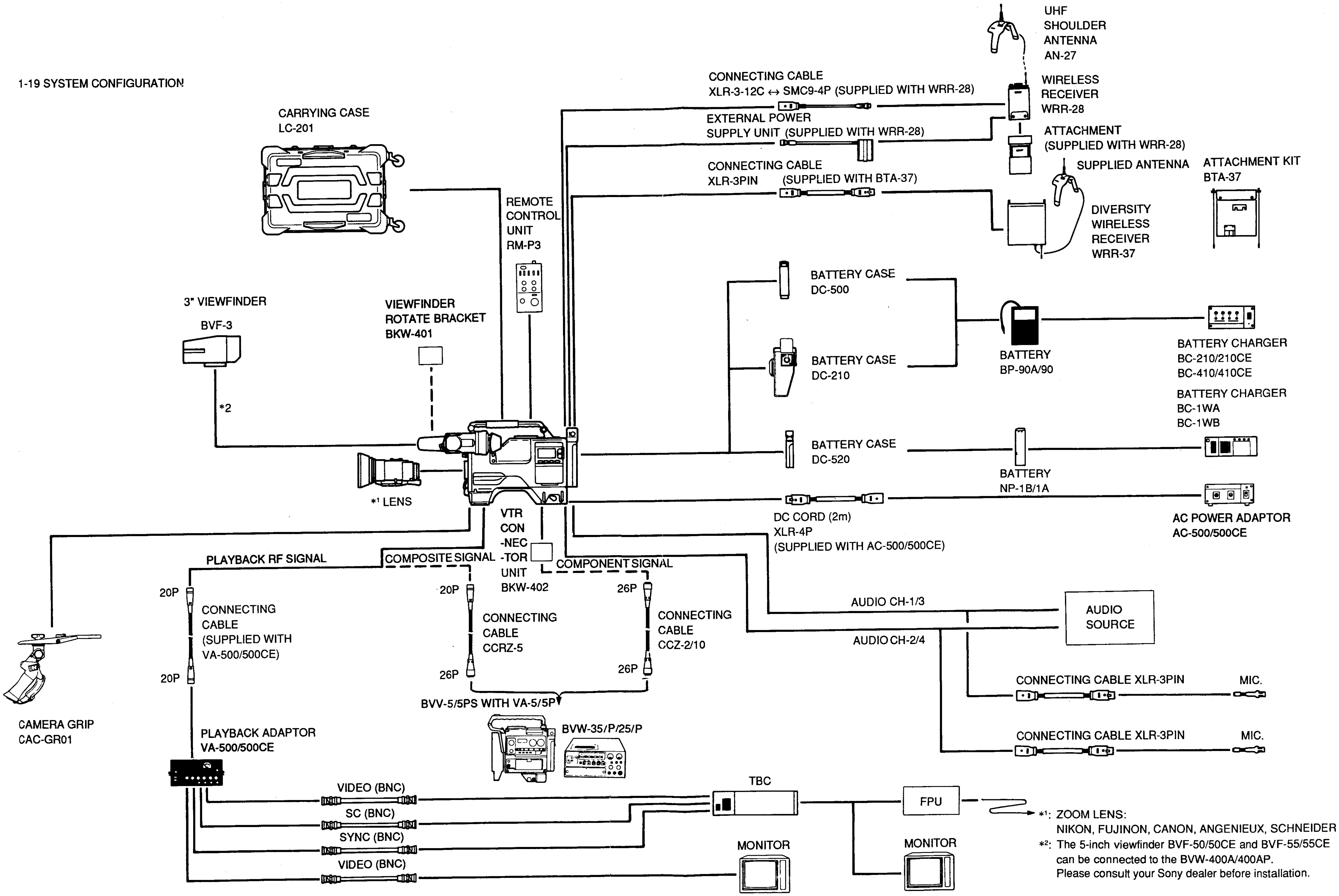
- 3-inch viewfinder : BVF-3

- 5-inch viewfinder : BVF-50/50CE, BVF-55/55CE

Please refer to OPERATION MANUAL for more information on installation.

- Earphone : ME-20B
- Microphone : C-74
- Microphone Holder : CAC-12
- Cradle Suspension : CRS-3P
- Carrying Case : LC-201
- UHF portable tuner attachment kit: BTA-27
- Cassette Tape : BCT-5M / 10M / 20M / 30M
  BCT-5G / 10G / 20G / 30G
- Portable Videocassette Recorder : BVW-35/P, BVW-25/P
- BVW-35/25 Connection Cable : CCRZ-5, CCZ-2/10
- Cleaning Cassette: BCT-5CLN
- VF Slide Guide for Left Eye
  (Sony Part No. A-7612-381-A)
- VF fog-proof filter
  (Sony Part No. 1-547-341-11)
- Chest Pad
  (Sony Part No. A-8262-516-A)
- Eyepiece Assembly for aged eyes
  (Sony Part No. A-8262-537-A)
- Eyepiece Assembly for low power
  (Sony Part No. A-8262-538-A)
- Lens Assembly
  (standard magnification with special compensation for aberration)
  (Sony Part No. A-8267-737-A)
- High performance (3×) Lens Assembly
  (Sony Part No. A-8314-798-A)

1-19 SYSTEM CONFIGURATION


UHF
SHOULDER
ANTENNA
AN-27
CONNECTING CABLE
XLR-3-12C ↔ SMC9-4P (SUPPLIED WITH WRR-28)
WIRELESS
RECEIVER
WRR-28
EXTERNAL POWER
SUPPLY UNIT (SUPPLIED WITH WRR-28)
ATTACHMENT
(SUPPLIED WITH WRR-28)
CONNECTING CABLE
XLR-3PIN (SUPPLIED WITH BTA-37)
SUPPLIED ANTENNA
ATTACHMENT KIT
BTA-37
DIVERSITY
WIRELESS
RECEIVER
WRR-37
CARRYING CASE
LC-201
REMOTE
CONTROL
UNIT
RM-P3
3" VIEWFINDER
BVF-3
VIEWFINDER
ROTATE BRACKET
BKW-401
*2
*1 LENS
BATTERY CASE
DC-500
BATTERY CASE
DC-210
BATTERY CASE
DC-520
BATTERY
BP-90A/90
BATTERY CHARGER
BC-210/210CE
BC-410/410CE
BATTERY CHARGER
BC-1WA
BC-1WB
BATTERY
NP-1B/1A
DC CORD (2m)
XLR-4P
(SUPPLIED WITH AC-500/500CE)
AC POWER ADAPTOR
AC-500/500CE
VTR
CON
-NEC
-TOR
UNIT
BKW-402
PLAYBACK RF SIGNAL
COMPOSITE SIGNAL
COMPONENT SIGNAL
20P
CONNECTING
CABLE
(SUPPLIED WITH
VA-500/500CE)
20P
20P
CONNECTING
CABLE
CCRZ-5
26P
26P
CONNECTING
CABLE
CCZ-2/10
26P
BVV-5/5PS WITH VA-5/5P
BVW-35/P/25/P
AUDIO CH-1/3
AUDIO CH-2/4
AUDIO
SOURCE
CONNECTING CABLE XLR-3PIN
MIC.
CONNECTING CABLE XLR-3PIN
MIC.
CAMERA GRIP
CAC-GR01
PLAYBACK ADAPTOR
VA-500/500CE
VIDEO (BNC)
SC (BNC)
SYNC (BNC)
VIDEO (BNC)
TBC
FPU
MONITOR
MONITOR

*1: ZOOM LENS:
NIKON, FUJINON, CANON, ANGENIEUX, SCHNEIDER

*2: The 5-inch viewfinder BVF-50/50CE and BVF-55/55CE can be connected to the BVW-400A/400AP. Please consult your Sony dealer before installation.

SECTION 2
PERIODIC CHECK AND MAINTENANCE

2-1. MAINTENANCE TIME TABLE

The replacement time shown in the table below is not the gurantee term of parts. Use this table as guideline for maintenance and inspection. The replacement time of parts varies depending on the operating environment and conditions of the unit,

To maintain the steady performance,it is recommended to clean the tape running system every the following hours as a guide.
- every 50 hours (A) : Cleaning by cleaning tape (Refer to Section 2-4)
- every 200 hours (A) : Perform the cleaning by the following process (Refer to Section 2-4)
  1. Cleaning by cleaning tape (Refer to Section 2-4)
  2. Cleaning by cleaning cloth (Refer to Section 2-4)

ITEM	Part No.	HOURS METER MODE	500 (H)	1,000 (H)	1,500 (H)	2,000 (H)	2,500 (H)	3,000 (H)	3,500 (H)	4,000 (H)	4,500 (H)	5,000 (H)	5,500 (H)
Upper drum	A-6762-418-(UC) A-6762-406-(EK)	A	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Tension regulator band	X-3722-325-	B	–	♦	–	♦	–	♦	–	♦	–	♦	–
Supply side soft brake	X-3722-324-	B	–	♦	–	♦	–	♦	–	♦	–	♦	–
Take-up side soft brake	X-3722-323-	B	–	♦	–	♦	–	♦	–	♦	–	♦	–
Supply side idler *1	A-6740-092-	B	–	–	–	–	–	♦	–	–	–	–	–
Take-up side idler *2	A-6740-091-	B	–	♦	–	♦	–	♦	–	♦	–	♦	–
Pinch roller	X-3722-363-	B	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Timing belt	3-722-452-	B	–	–	♦	–	–	♦	–	–	♦	–	–
Slip ring	A-6050-652-	A	–	♦	–	♦	–	♦	–	♦	–	♦	–
Brush	A-6050-648-	A	–	♦	–	♦	–	♦	–	♦	–	♦	–
Lower drum *3	A-6050-673-(UC) A-6050-611-(EK)	B	–	–	♦	–	–	♦	–	–	♦	–	–
Gear	X-3722-306-	B	–	♦	–	♦	–	♦	–	♦	–	♦	–
Slantness table (rail)	3-725-214- 3-725-215- 3-725-217- 3-725-218-	B	–	O	–	O	–	♦	–	O	–	O	–
Threading cam gear	A-6737-190- A-6750-231- A-6750-233-	B	–	–	–	–	–	♦	–	–	–	–	–
Sensor on the reel Table	———	B	–	O	–	O	–	O	–	O	–	O	–

• Threading motor	B	1,500H
• Capstan motor	B	1,500H
• Full erase head	B	1,500H
• CTL head	B	1,500H
• A/T head	B	1,000H

*1 Needless to replace from A-8278-249-
*2 Needless to replace from A-8278-352-
*3 Replacement of the Head drum ass'y

(NOTE) 1 HOURS METER MODE
A: DRUM RUNNING METER
B: TAPE RUNNING METER
C: OPERATION METER

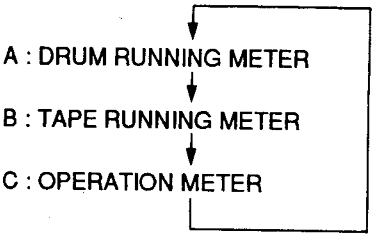
2 ♦: Replacement
O: Cleaning

2-2. HOURS METER

BVW-400/400P has an hours meter in the DIAGNOSTIC mode. It displays the accumulated time of drum rotating time, tape running time, and VTR turning on time on the display on the side panel.
It is recommended to perform the periodic checks and maintenance based on the hours meter.
Hours meter can be displayed by the following procedures described below.

1. Press the DIAGNOSTIC switch on the side panel and put into the DIAGNOSTIC mode.
   "DRUM RUNNING METER" is displayed.

2. By pressing the SHIFT button on the side panel, the display rotates in the following sequence.



A : DRUM RUNNING METER
B : TAPE RUNNING METER
C : OPERATION METER

3. To end the DIAGNOSTIC mode, press the DIAGNOSTIC switch again.

(NOTE) If the TC-48A/AP board is replaced, be sure to replace the nonvolatile memory (Ref. No. IC515).

2-3. MAINTENANCE AFTER THE REPAIRS

Perform the following maintenance after repair without regarding the machine operating hours.

1. Video heads and stationary heads cleaning.
2. Tape movement area cleaning.

2-4. CLEANING PROCEDURE

[Cleaning by Cleaning Tape]
Tools : • Cleaning Tape : BCT-5CLN or BCT-D12CL
(standard products)

Procedures :
1. Inserts the cleaning tape to the unit.
2. Runs the cleaning tape in the playing mode at 5 seconds.
3. Take out the cleaning tape.

(NOTE) Be sure to use the cleaning tape the BCT-5CLN or BCT-D12CL. If the cleaning is performed by other cleaning tape, not the BCT-5CLN or BCT-D12CL, unusual friction or damage of the video head may occur.

[Cleaning by Cleaning Cloth]
Tools : • Cleaning Cloth : 3-184-527-01 (size 150 × 150 mm)
or 3-178-770-01
(size 240 × 240 mm)
• Cleaning Fluid : 9-919-573-01

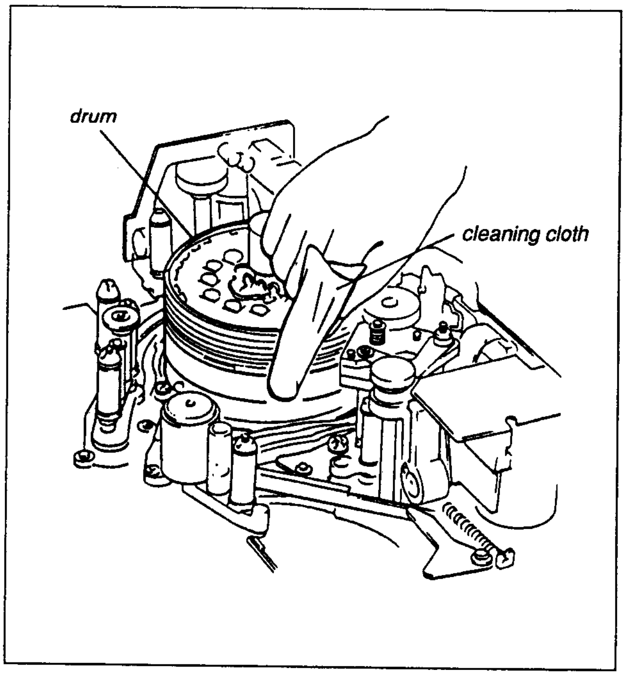
Procedures :
1. Turn the power off.
2. The Cassette-up Compartment can be fully opened. (Refer to Section 3-3)
3. Hold the cleaning cloth moistened with cleaning fluid keeping it from becoming wrinkled.
   And perform the cleaning of the following.
   The detail of the cleaning method is as shown below.
   - 2-4-1. Video Head
   - 2-4-2. Audio/TC, Audio Confidence Heads
   - 2-4-3. CTL, FE (Full Erase) Heads
   - 2-4-4. Tape Movement Areas
4. After cleaning, wipe it with a dry cleaning cloth two or tree times.
5. Return to the Cassette-up Compartment.

(NOTE)
- Each block in the mechanical deck consists of a precision parts and is adjusted precisely. Be careful not to damage each part and to apply an excessive force during cleaning.
- Do not touch the greased portions during cleaning. If the grease attach to a cleaning cloth, replace the cleaning cloth by new one. If a cleaning smeared with grease is used, grease may attach to the places where it should not.
- Do not insert a cassette tape before a cleaning fluid completely evaporates after cleaning.

2-4-1. Video Head

Press the cleaning cloth moistened with cleaning fluid and turn the drum slowly with hand.

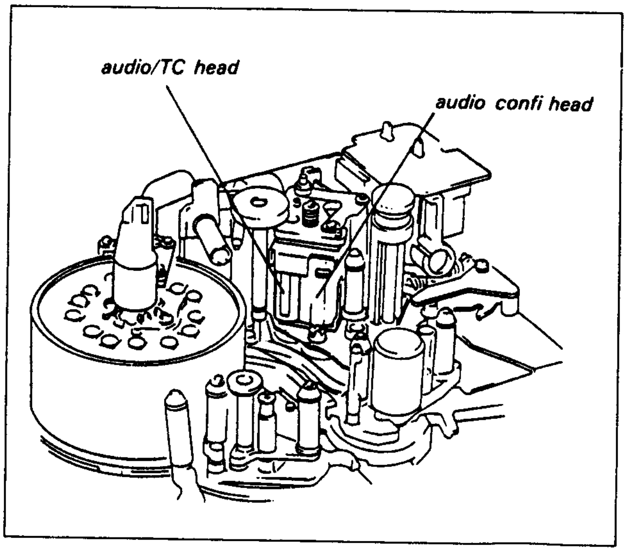
(NOTE)
- Be sure to clean the head with the power off.
- Never move the cleaning cloth in the vertical direction on the head tip during cleaning.
- Do not use a head cleaner stick to clean the rotary heads.



2-4-2. Audio/TC, Audio Confidence Heads

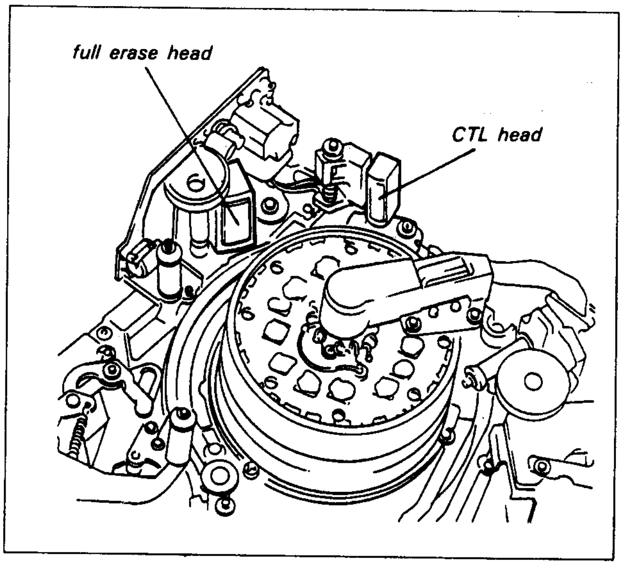
Clean with the cleaning cloth moistened with the cleaning fluid.

(In case of the cleaning of the Stationary Head, the head cleaner stick can be used instead of the cleaning cloth. Head Cleaner Stick: 3-601-330-01)



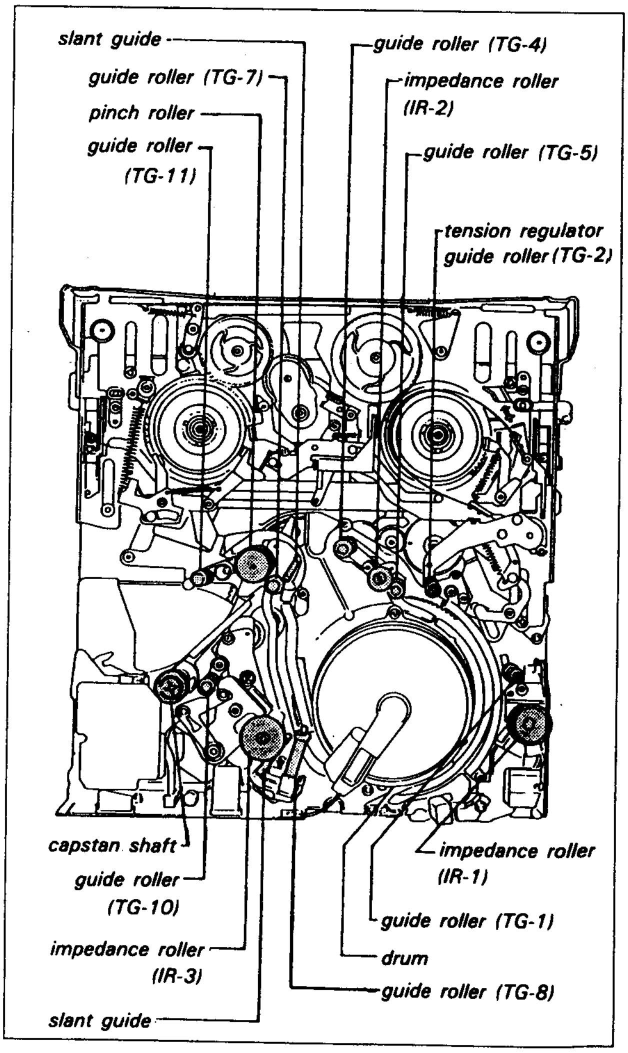
2-4-3. CTL, FE (Full Erase) Heads

Clean with the cleaning cloth moistened with the cleaning fluid.
(In case of the cleaning of the Stationary Head, the head cleaner stick can be used instead of the cleaning cloth. Head Cleaner Stick: 3-601-330-01)

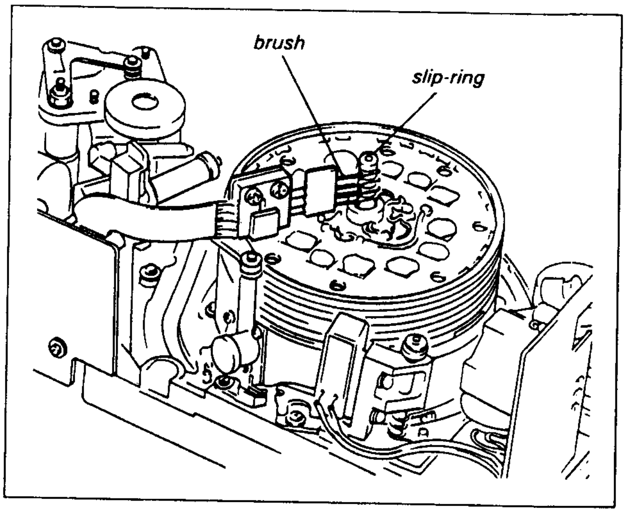

full erase head
CTL head

2-4-4. Tape Movement Areas

Clean with the cleaning cloth moistened with the cleaning fluid; tape guides, drum, capstan and the pinch roller as shown in the figure.


slant guide
guide roller (TG-7)
pinch roller
guide roller (TG-11)
guide roller (TG-4)
impedance roller (IR-2)
guide roller (TG-5)
tension regulator guide roller (TG-2)
capstan shaft
guide roller (TG-10)
impedance roller (IR-3)
slant guide
impedance roller (IR-1)
guide roller (TG-1)
drum
guide roller (TG-8)

2-4-5. Slip-rings and Brushes



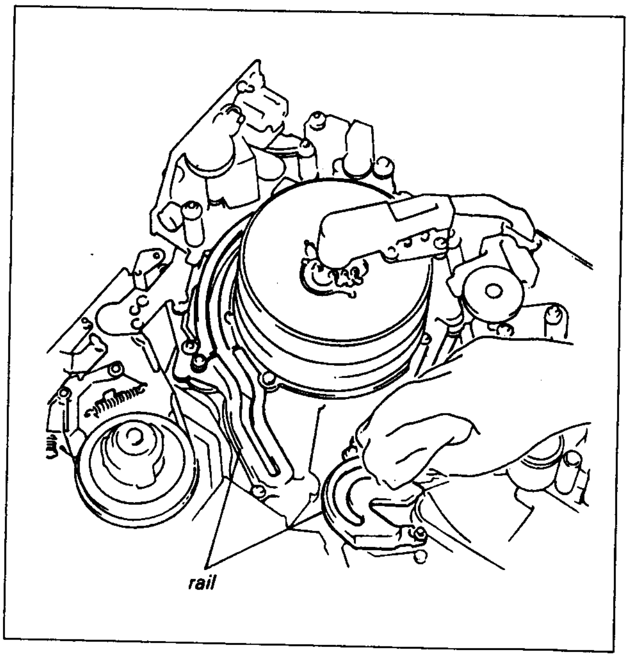
The Head Drum Assembly Slip-rings and Brushes do not require periodic cleaning. However, if dust adheres to the Slip-rings or Brushes, clean them as follows:

1. Clean the Slip-ring or Brush with a Soft brush which has short hairs. If this brush can not be obtained, use a Blower brush and Cotton Swab.
2. Cleaning fluid is not especially necessary. However, if it is difficult to remove persistent debris, use Freon as a cleaning agent.

(NOTE)
- Do not use alcohol as a cleaning fluid. If the Slip-ring and the Brushes are cleaned with alcohol, the surface tends to attract material which may increase the resistance at the contact area.
- Do not use conductive grease.

2-4-6. Rail

Clean with the cloth moistend with the alcohol.



2-4-7. Viewfinder Lens

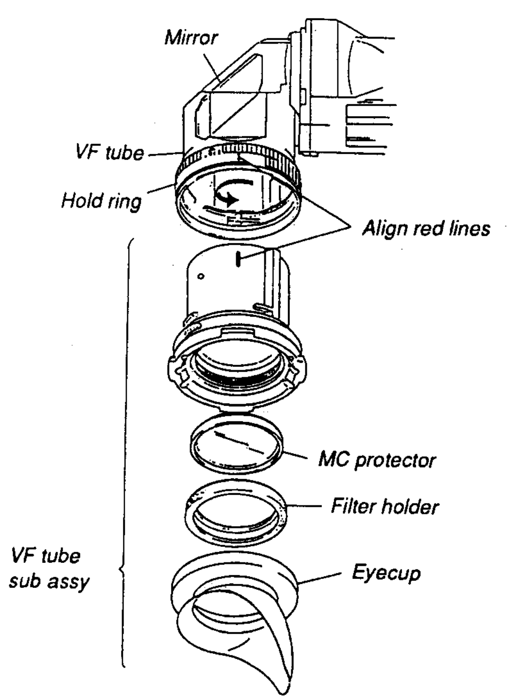
By extracting the VF tube sub assy, lens and MC protector can be easily cleaned. And also dust on the CRT surface or mirror can be easily cleaned off.

1. Turn the hold ring to the left and extract the VF tube sub assy.
2. Detach the eyecup.
3. Remove the MC protector together with the filter holder.
4. Clean the lens and MC protector with a commercially available camera lens cleaner. Blow off dust with a blower carefully so as not to flaw the mirror.
5. After the cleaning is completed, install by reversing the preceding steps. Align red lines of the VF tube and VF tube sub assy when inserting, and turn the hold ring to the right until it locks.

(NOTE)
- Do not use any type of solvent, such as alcohol, benzine or thinner to remove stains.
- Be sure to attach the eyecup to the VF, or the MC protector may come off.
- To protect the viewfinder lens from drops, put the MC protector in the filter holder and attach the eyecup securely.
- To prevent mist on a lens, an optional fog-proof filter (FP filter, Sony parts No. 1-547-341-11) is prepared. Use in place of the MC protector.
- The following parts are available as optional accesories.

  Eyepiece Assembly for aged eyes
  (Sony Part No. A-8262-537-A)
  Eyepiece Assembly for low power
  (Sony Part No. A-8262-538-A)

  They can be replaced in place of the VF tube sub assembly, if necessary.



2-5. AFTER USED AT SEASIDE OR DUSTY AREAS

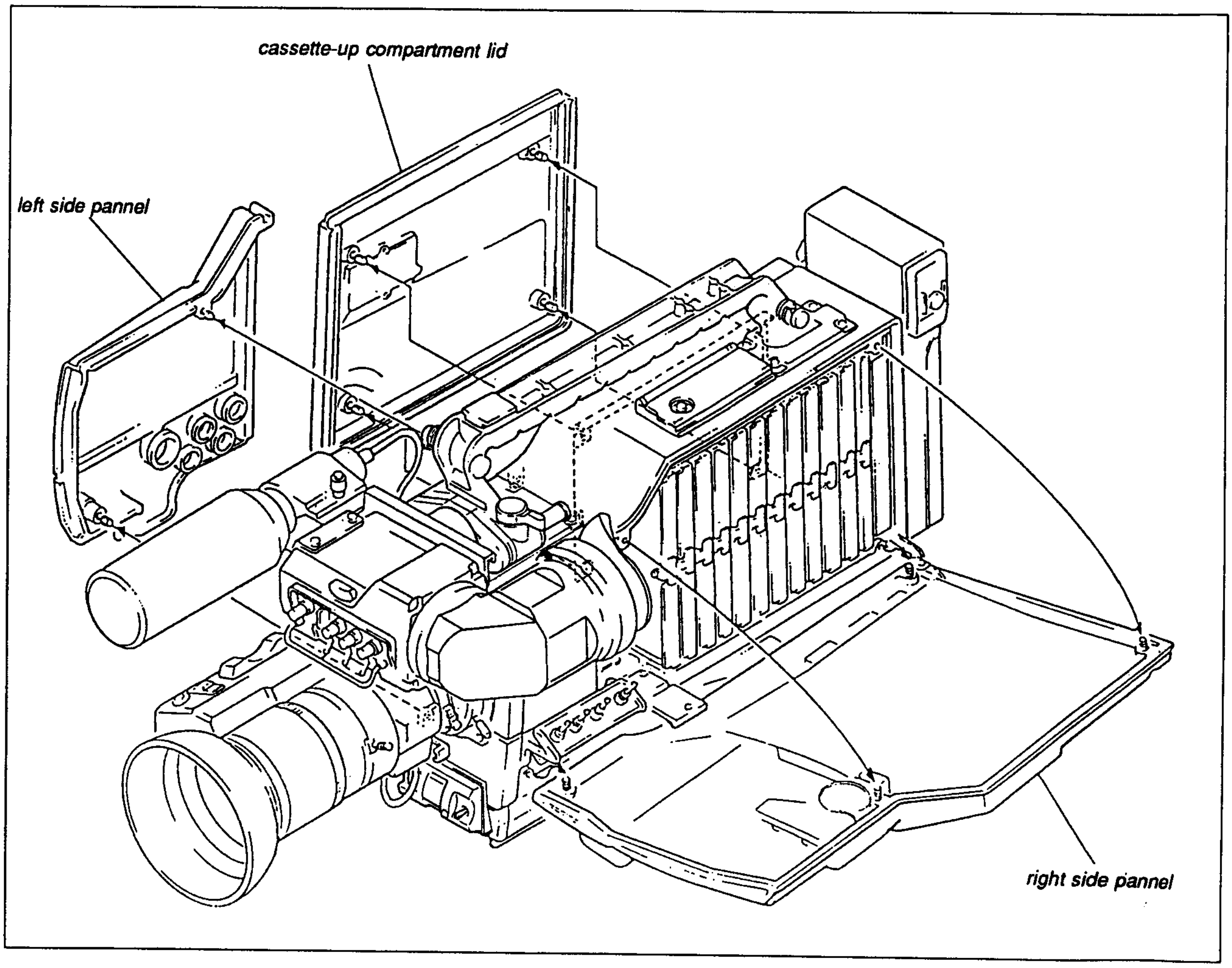
It is recommended to check the following items after the news gathering at seaside or dust areas.

1. Clean off sand and other dust in the unit with a cleaning cloth moistened with the cleaning fluid, or blow off with an air-brush carefully.
2. Clean the video head and sationary heads with a cleaning cloth moistened with the cleaning fluid.
3. Clean the tape movement areas (the drum surface, tape guides, capstan shaft and the pinch roller) with a cleaning cloth moistened with the cleaning fluid.
4. Clean the upper of chassis of the unit.
5. Clean the surface of the reel tables contacting with the brake shoes.
6. Rotate by hand and move the tape guides, pulley, capstan and the pinch roller, and check that any abnormal noise sounds or not. If there sounds a noise, replace the part immediately.
7. After the news gathering at seaside, remove the printed circuit board.
   Clean the printed circuit board with a cleaning cloth moistened with the cleaning fluid after blow off sand on the completely. Then clean the soldering side in the same manners.
8. Clean the connector on the connector panel completely.
9. Perform the operation check and be sure that the machine operates normally.

SECTION 3
SERVICE INFORMATION

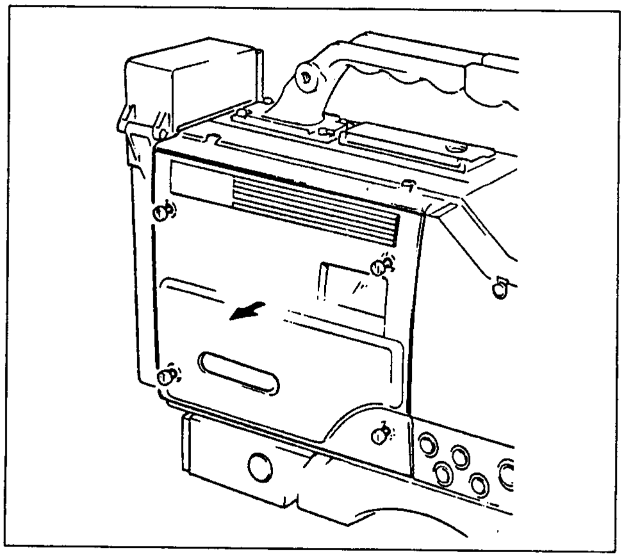
3-1. REMOVAL OF THE CABINET

Loosen the fixing screws shown in the figure, and remove the panels.

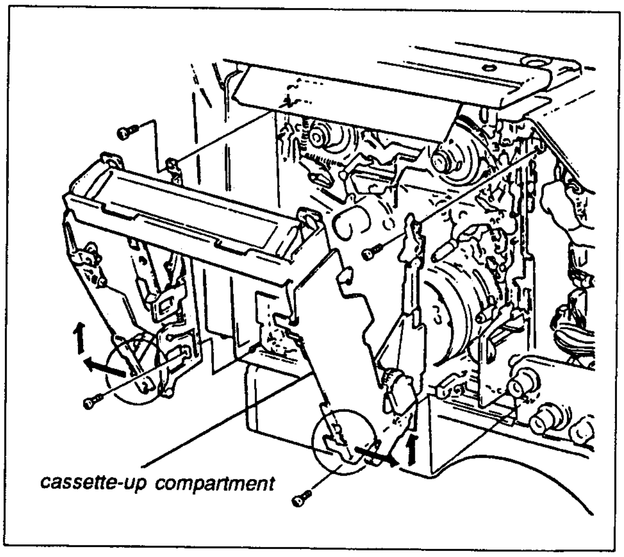

cassette-up compartment lid
left side pannel
right side pannel

3-2. REMOVAL OF THE CASSETTE-UP COMPARTMENT

1. Loosen the four fixing screws and remove the Cassette-up Compartment Lid.



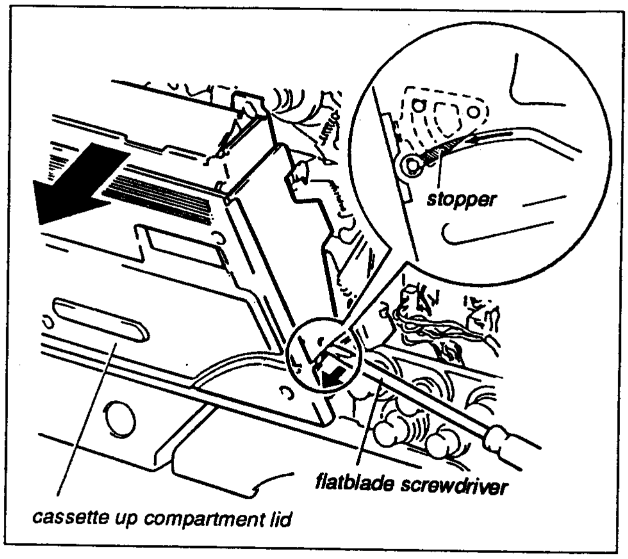
2. Remove the four fixing screws shown in the figure. Then move the Cassette-up Compartment in the direction of the arrows and remove it.



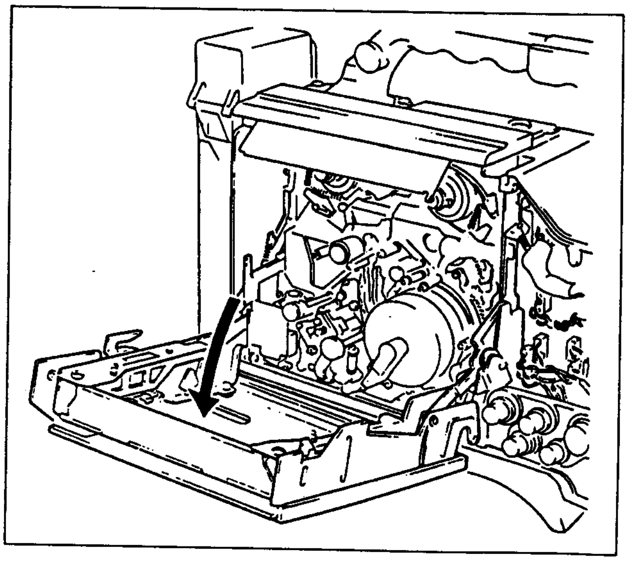
3-3. HOW TO FULLY OPEN THE CASSETTE-UP COMPARTMENT

The Cassette-up Compartment can be fully opened for tape movement area cleaning and heads cleaning.

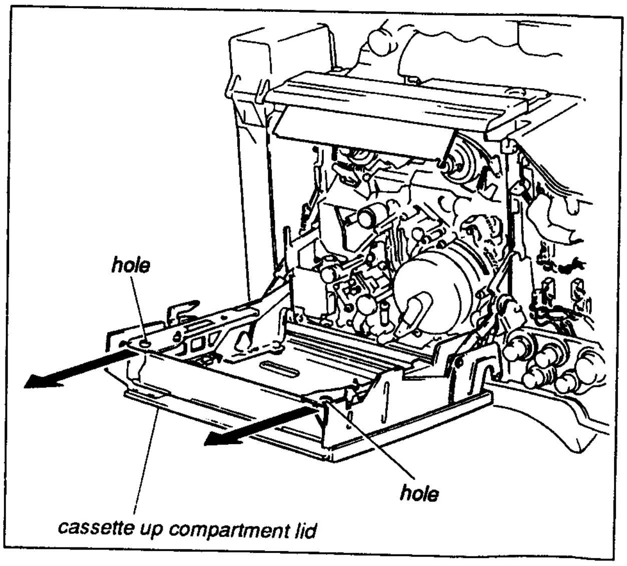
1. Put the unit into EJECT mode.
2. Release the stopper by inserting a flatblade screwdriver into the grooves on the left and right sides of the Cassette-up Compartment shown in the figure while pulling its lid lightly in the direction of the arrow.


stopper
flatblade screwdriver
cassette up compartment lid

3. Then, the Cassette-up Compartment is fully opened.



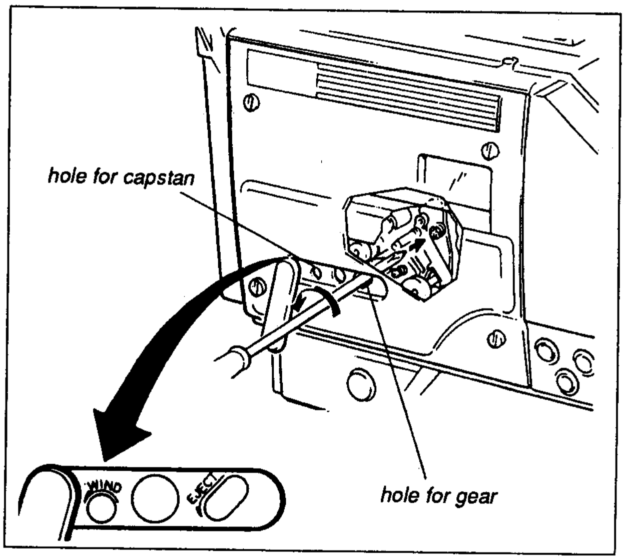
4. To return to the original position, pull the two holes shown in the figure in the direction of the arrow and close the lid of the Cassette-up Compartment. (A click sound will be heard).
   Check that the Cassette-up Compartment has been returned to its correct position.

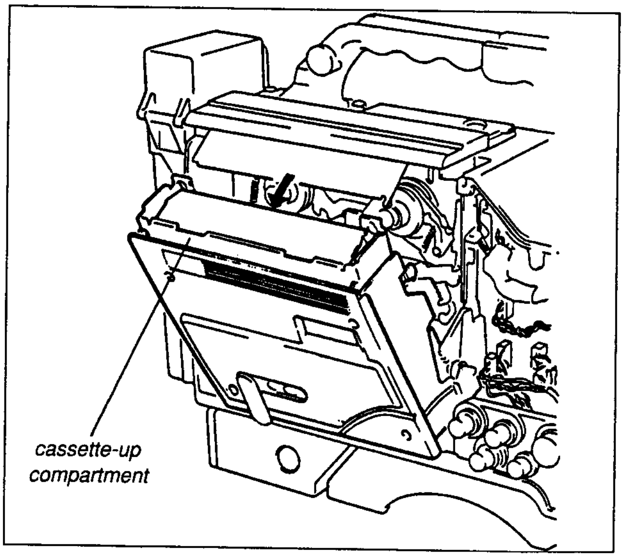

hole
hole
cassette up compartment lid

3-4. WHEN THE TAPE SLACKED IN THE UNIT, HOW TO REMOVE THE CASSETTE TAPE

1. Turn OFF the POWER switch.
2. Open the cover on the Cassette-up Compartment Lid.
3. While holding the Cassette-up Compartment by hand, insert the phillips type screwdriver into the hole for the gear shown in the figure and turn the gear about four times in the EJECT direction.
4. After detecting that the lock is released by hand, insert the screwdriver into the hole for capstan shown in the figure, and turn the Capstan in the WIND direction until the supply side Reel Table begin to rotate.
5. When the tape is wound into the cassette, pull out the screwdriver from the unit and release the hand from the Cassette-up Compartment.
6. Then, the cassette tape can be removed.

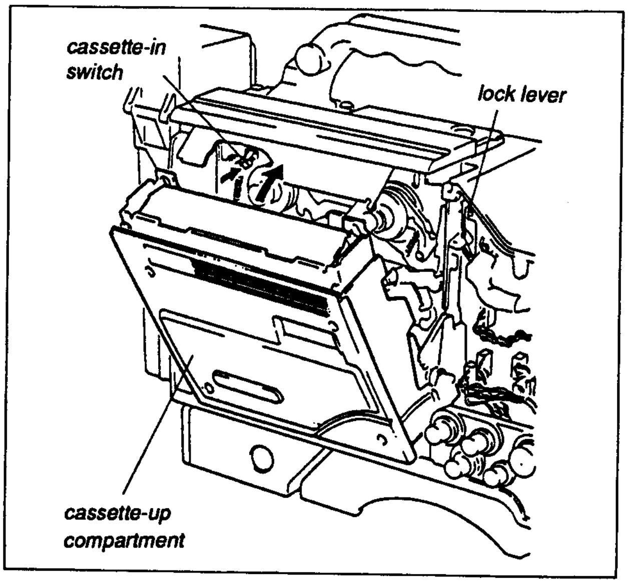
(NOTE) After remove the cassette tape, be sure to turn ON the POWER switch before close the Cassette-up Compartment.
If not, the Cassette-up Compartment is not locked, because the lock lever is not located in the normal position.





3-5. OPERATION OF THE UNIT WITHOUT THE CASSETTE TAPE

1. Put the unit into EJECT mode.
2. Open the Cassette-up Compartment fully. (Refer to Sec.3-3)
3. While pressing the Cassette-in switch, press the stopper of the lock lever with a pencil lead or similar object and lock the stopper.
4. After the movement of the Reel Chassis is completed, release the Cassette-in switch.
5. Press the desired function button.

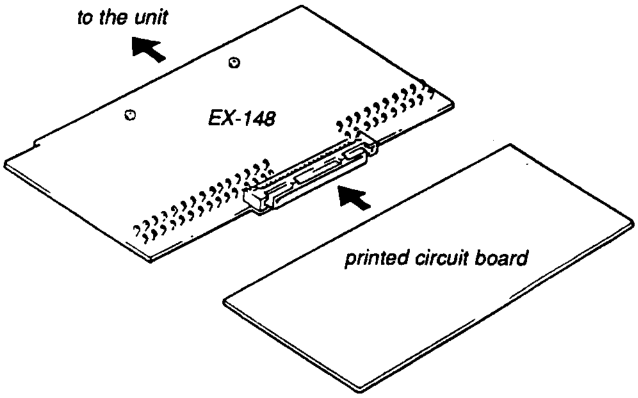

cassette-in switch
lock lever
cassette-up compartment

3-6. EXTENSION BOARD

The plug-in type printed circuit boards listed below can be serviced by using Extension Board, EX-148.
Simply insert the Extension Board into the amplifier chassis and connect the circuit board to be serviced to the end of the Extension Board.
(NOTE) Be sure to turn OFF the POWER before inserting or removing the Extension Board or printed circuit boards.

Connectable printed circuit board

- AT-49B
- IE-30/P
- VA-104
- PR-176/U
- EN-79U/P
- SG-152/AP
- VP-24/P
- VDA-11/P
- AFM-6/P
- AU-97/P
- SV-97A/AP
- SY-117C/CP
- DC-DC CONVERTER CD-89



3-7. NOTES FOR ADJUSTMENT OF THE PRINTED CIRCUIT BOARDS

(1) Power is supplied irrespective of POWER switch is turned OFF, because of back up of the time code data.
When disconnecting the FL-57 flexible printed circuit board connected to the TC-48A/AP board, turn OFF the POWER switch, remove the battery and disconnect the cable from the DC IN connetor.

(2) If the protect circuit of the DC-DC converter CD-89 is activated because of the short circuit of power circuit, turn OFF the POWER switch once, after a while, about more than one minute later, turn ON the POWER switch.

3-8. SERVICE OF THE PRINTED CIRCUIT BOARD

- **TC-48A/AP Board**

If the TC-48A/AP board is replaced, be sure to mount the nonvolatile memory (Ref. No. IC515) that is used in the unit before.

- **MB-317/P Board**

When replacing the MB-317/P board, remove the all plug in printed circuit board, and remove the upper and lower PC board guides.

- **BI-29, BI-30, BI-31/BI-69, 70, 71 Boards ***

The BI-29, 30, 31/BI-69, 70, 71 board on which the CCD is mounted had better not be removed. When removing it, the CCD is sometimes broken by the static electricity. If the CCD is brocken, the whole CCD unit must be replaced.

* Serial No. 10001 thru 10027, 40001 thru 40031
BI-29/30/31 boards
Serial No. 10028 and higher, 40032 and higher
BI-69/70/71 boards

3-9. DISCONNECT AND CONNECT OF THE FLEXIBLE PRINTED CIRCUIT BOARD

1. Turn the POWER OFF, remove the battery and disconnect the DC IN connector.
2. Disconnect and install the flexible printed circuit board as shown in the figure.

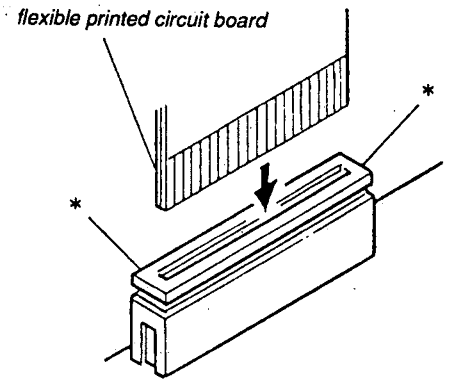
<Straight Type>

Disconnecting procedure

Pull up the * marked portions of connector, and pull out the flexible printed circuit board from the connector.

Installing procedure

Install the flexible printed circuit board as far as it will go until the line indicated on the flexible printed board, and push down the * marked portions of connector.



<Angle Type>

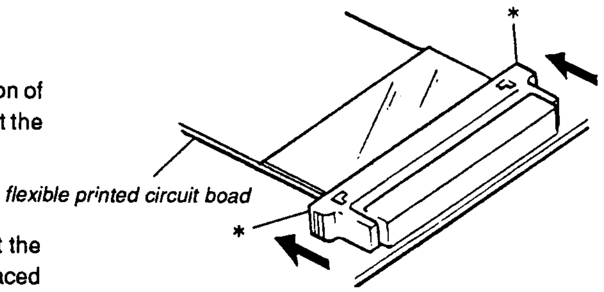
Disconnecting procedure

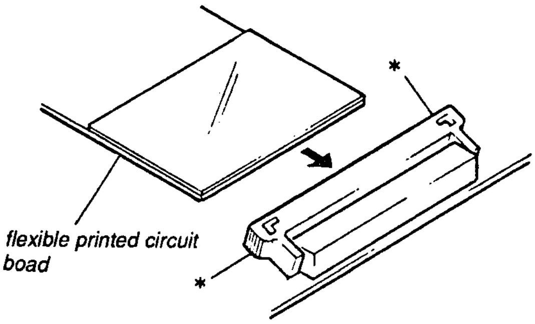
Slide the * marked portions of connector in the direction of the arrows, pull up the connector, and then disconnect the frexible printed circuit board from the connector.

Installing procedure

Pull up the * marked portions of the connector, insert the flexible printed circuit board on its contacting side is faced to the printed circuit board, and insert it as far as it will go untill the line indicated on the flexible board.

Push down the * marked portions, then slide it in the direction of the arrow to lock.





(NOTE) 1. Not install the flexible printed circuit board on a slant.

2. Not short the terminal of the flexible printed circuit board.

3-10. CAUTION FOR ELECTRICAL PART REPLACEMENT

3-10-1. Chip Parts Replacement Procedure

Tools: Soldering iron of 20W (Use a temperature controller, if possible, which can control the iron temperature to 270 ± 10°C)
Desoldering metal braid (Solder Wick or equivalent)
Solder (0.6 mm dia.)
Tweezers

Soldering Conditions: Tip temperature; 270 ± 10°C within the 2 seconds

1. To remove a resistor or capacitor, place the tip of a soldering iron on chip parts to heat the parts, and then move it horizontally for removal while being desoldered. For removal of a diode or transistor, heat the one side, with two pins, of chip parts at the same time, set the parts up when desoldered, and remove the two pins.
   And then, remove the pin on another side.
2. Absorb solder by using a desoldering metal braid to smooth the land surface of board after removal.
3. Confirm by visual check that no pattern of the removed chip parts is peeled off and no adjacent parts is damaged or bridged.
4. Perform a thin pretinning on the pattern.
5. Place new chip parts on the pattern to solder its both sides.

(NOTE)
- The chip part removed should not be used again.
- When mounting the new chip part, should not shift so that it not short.
- Use the soldering iron verticaly as much as possible.
- When mounting the new chip part, heat it from pattern side. Never contact the tip of the soldering iron to the part.

* When removing the IC, it is recommended that the following TECHNO DESIGN soldering iron be used.
TOP-482 for SOP
TOP-483 for QFP
TOP-480 temperature controller
for TOP-482,483

3-11. SPARE PARTS

1. The shaded ▨ and ⚠ marked components are critical to asfety.
   Replace only with the same components as specified.

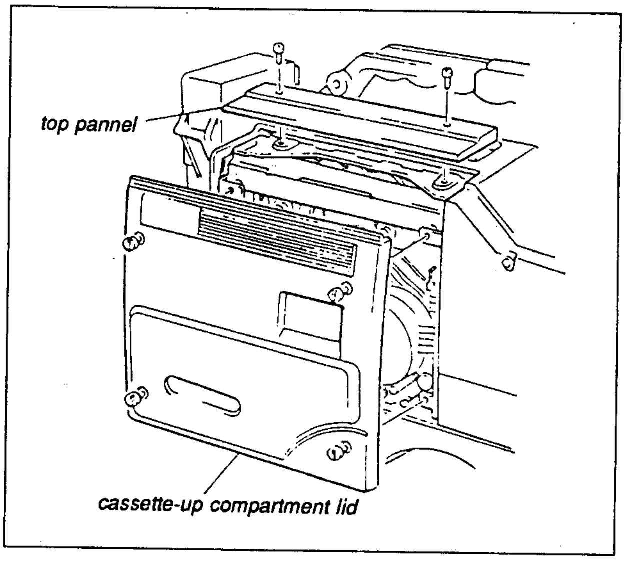
2. Replacement parts supplied from the Sony Parts Center will sometimes have a different shape and outside view from the parts which are used in the unit. This is due to "accommodating improved parts and/or engineering changes" or "standardization of genuine parts".
   - This manual's exploded views and electrical spare parts lists indicate the part numbers of "the present standardized genuine parts".
   - Regarding engineering part changes by our engineering department, refer to Sony service bulletins and service manual supplements.

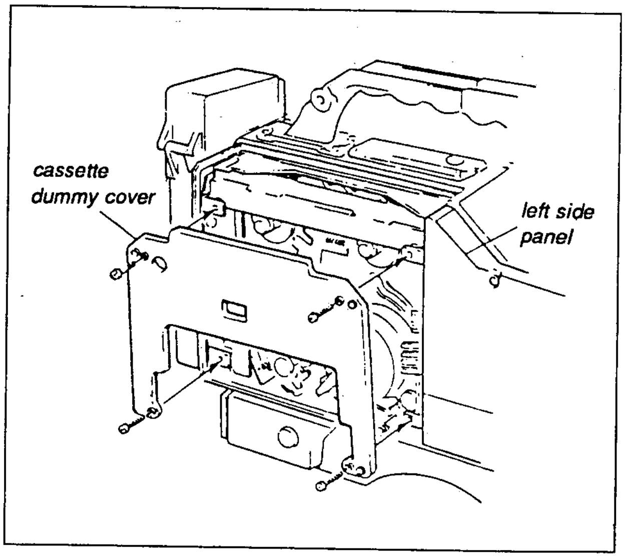
3. The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

3-12. REMOVAL OF THE MECHANICAL DECK BLOCK

1. Put the unit into the threading end mode.
2. Remove the Top Panel.
3. Remove the Cassette-up Compartment Lid and install the Cassette Dummy Cover which is prepared for service.
4. Remove the Left Side Panel.
5. Remove the four screws which secure the mechanical deck block to the unit by using the hexagon bit (J-6326-120-A).
6. Remove the mechanical deck block from the unit while removing the connectors below on the mother board.
   Drum : CN41 and CN42
   FE-4 board : CN43
   TB-5 board : CN44

(NOTE) When installing the mechanical deck block, perform the tape run check or alignment in Section 6.


top pannel
cassette-up compartment lid


cassette dummy cover
left side panel

3-13. USE OF THE SERVO REMOTE CONTROL TOOL

For servo system alignment and mechanical alignment, it is recommended to use the SERVO REMOTE CONTROL TOOL (EW-229).

(1) Connection

1. Connect the connector (14P, female) of the supplied harness to the tool.
2. Connect the other side of the connector of the harness to CN2/SV-97A/AP board of the VTR.

(2) Function of switches and test points

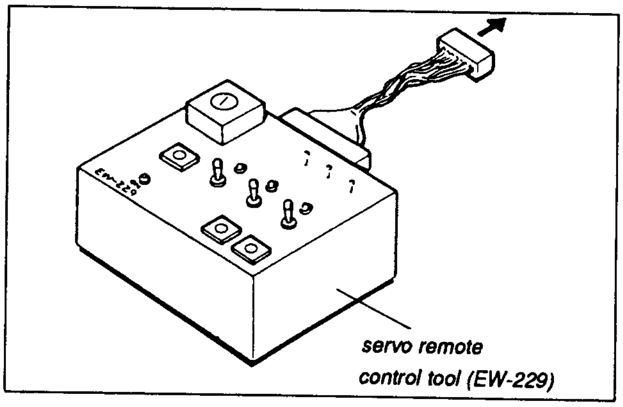
The desired mode can be obtained by push switches and rotary switch on the function control panel of this tool.

- TRCON switch

After the rotary switch is set to the "F" position, turn ON this switch. Then LED lights, tracking control is possible by pressing the "+" button or the "–" button.
When turned OFF, return the unit to the just tracking mode.
The memory is cleared by disconnecting the connector of the tool from the CN2/SV-97A/AP board.

- SW POSITION switch

After the rotary switch is set to the "F" position, turn ON this switch. Then LED lights, the switching position is shifted by pressing the "+" button or the "–" button.



- REC SERVO switch

Extend the SV-97A/AP board by using the EX-148 extension board. After the rotary switch is set to the "F" postion, open or short the TP11/EX-148 board. Then the following mode is obtained.

- After the TP11/EX-148 board is opened, turn ON this switch. Then LED lights, the capstan servo circuit is put into the REC SERVO mode.
- After the TP11/EX-148 board is shorted with GND, turn ON this switch. Then LED lights, the unit is put into the back space editing alignment mode.

- REV button

The unit is put into REV mode by pressing this button.
Press the STOP button on the VTR, the unit is put into the STOP mode.

- SW PULSE test terminal

The switching pulse signal is appeared at this test terminal.

- CTL test terminal

The CTL signal is appeared at this test terminal.

- Rotary switch

The mode described in the following table is obtained by setting the rotary switch to "0" through "F" positions. However the rotary switch is set to the same position, the different mode can be obtained by shorting between TP11/EX-148 board and GND. (In this mode, extract the SV-97A/AP board, and extend it with EX-148 extension board.)
When the rotary switch is set to the specified positions, it is neccessary to mute the slack detection circuit.
The slack detecion circuit can be muted by turning ON the S1/SY-117C/CP board.

Rotary Switch	TP11/ EX-148	Mode	For use
0	OPEN	Drum rotating. Capstan rotating. The CH-1 head of luminance or chrominance is selected.	Recording/playback is possible with the CH-1 head only of luminance or chrominance. This mode is used for check and adjustment to the CH-1 head for luminance or chrominance.
	Short with GND	Phase servo circuit of the drum is turned to OFF.	Check the servo system circuit.
1	OPEN	Drum rotating. Capstan rotating. The CH-2 head of luminance or chrominance is selected.	Recording/playback is possible with the CH-2 head only of luminance or chrominance. This mode is used for check and adjustment to the CH-2 head for luminance or chrominance.
	Short with GND	————	————
2	OPEN	Drum rotating. Capstan rotating. The CH-3 head of luminance or chrominance is selected.	Recording/playback is possible with the CH-3 head only of luminance or chrominance. This mode is used for check and adjustment to the CH-3 head for luminance or chrominance.
	Short with GND	————	————
3	OPEN	Drum rotating. Capstan rotating. The CH-4 head of luminance or chrominance is selected.	Recording/playback is possible with the CH-4 head only of luminance or chrominance. This mode is used for check and adjustment to the CH-4 head for luminance or chrominance.
	Short with GND	The capstan rotates at 1/6 times normal speed.	Check the CTL signal output at 1/6 times normal speed. (Before the check, mute the slack detection circuit.)
4	OPEN	Drum rotating is stopped. The switching pulse selects each channel. (Mute the slack detection circuit.)	
	Short with GND	The capstan rotates at three times normal speed.	Check the servo system circuit.

Rotary Switch	TP11/ EX-148	Mode	For use
5	OPEN	Drum rotating is stopped. The switching pulse selects the CH-1 head of luminance or chrominance. (Mute the stack detection circuit.)	
	Short with GND	————	————
6	OPEN	Drum rotating is stopped. The switching pulse selects the CH-2 head of luminance or chrominance. (Mute the stack detection circuit.)	
	Short with GND	————	————
7	OPEN	Drum rotating is stopped. The switching pulse selects the CH-3 head of luminance or chrominance. (Mute the slack detection circuit.)	
	Short with GND	————	————
8	OPEN	Drum rotating is stopped. The switching pulse selects the CH-4 head of luminance or chrominance. (Mute the slack detection circuit.)	
	Short with GND	————	————
9	OPEN	Capstan rotating is stopped in the PAUSE mode.	Tape path alignment. (Before the alignment, mute the slack detection circuit.)
	Short with GND	————	————

Rotary Switch	TP11/ EX-148	Mode	For use
A	OPEN	—	—
	Short with GND	—	—
B	OPEN	—	—
	Short with GND	—	—
C	OPEN	—	—
	Short with GND	—	—
D	OPEN	The overlap is increased of 3H in each entrance and exit side.	Check the quantity of overlap.
	Short with GND	—	—
E	OPEN	The limit of the RF alarm detection is increased.	RF alarm alignment.
	Short with GND	—	—
F	OPEN	Normal mode.	—
	Short with GND	Normal mode.	—

3-14. MAINTENANCE TOOL

Part Number	Description	For use
J-6001-820-A	DRUM ECCENTRICITY GAUGE (3)	Upper drum eccentricity adjustment
J-6001-830-A	DRUM ECCENTRICITY GAUGE (2)	Upper drum eccentricity adjustment
J-6026-100-A	RESOLUTION CHART	Measurement of Pick-up Tube Response
J-6026-130-B	GRAY SCALE CHART	Measurement of Pick-up Tube Response
J-6029-140-B	PATTERN BOX, PTB-500	Camera System Alignment
J-6080-003-C	FWD BACK TENSION MEASUREMENT CASSETTE	FWD torque adjustment
J-6086-570-A	PLATE, PARALELL	Audio head zenith adjustment
J-6152-450-A	WIRE CLEARANCE CHECK GAUGE	Clearance check
J-6321-500-A	TAPE GUIDE ADJUSTMENT DRIVER	Tape path adjustment
J-6321-880-A	CASSETTE DUMMY COVER	Mechanical deck adjustment
J-6325-110-A	TORQUE DRIVER BIT (FOR M1.4)	Parts replacement
J-6325-360-A	FLATNESS CHECK TOOL	Assembling the frame
J-6325-380-A	TORQUE DRIVER BIT (FOR M2)	Parts replacement
J-6325-400-A	TORQUE DRIVER (FOR 3kg)	Parts replacement
J-6325-530-A	DRUM ECCENTRICITY GAUGE (6)	Upper drum eccentricity adjustment
J-6326-120-A	HEXAGON BIT	Removal of the mechanical deck block
J-6332-290-A	SERVO REMOTE CONTROL TOOL	Mechanical deck and servo system adjustment
J-6335-710-A	REC CURRENT ADJUSTMENT TOOL	REC current adjustment
J-6336-070-A	SETUP ATTENUATOR TOOL	Video system adjustment
J-6335-730-A	VIDEO SIGNAL INPUT BOARD	Video system adjustment
J-6335-740-A	EXTENSION HARNESS	Mechanical deck adjustment
7-732-050-20	TENSION SCALE (50g FULL SCALE)	Tension adjustment
7-723-902-00	INSPECTION MIRROR	Video Tracking Adjustment
8-960-096-01	ALIGNMENT TAPE, CR2-1B (UC)	TAPE Run Alignment
8-960-096-41	ALIGNMENT TAPE, CR5-1B (UC)	Audio/Video System Adjustment
8-960-097-44	ALIGNMENT TAPE, CR5-2A (UC)	Video System Adjustment
8-960-097-45	ALIGNMENT TAPE, CR8-1A (UC)	Audio System Adjustment, TAPE Run Alignment
8-960-096-51	ALIGNMENT TAPE, CR2-1BPS (EK)	TAPE Run Adjustment
8-960-098-45	ALIGNMENT TAPE, CR8-1APS (EK)	Audio System Adjustment, TAPE Run Alignment
8-960-096-86	ALIGNMENT TAPE, CR8-1BPS (EK)	Audio System Adjustment, TAPE Run Alignment
8-960-098-44	ALIGNMENT TAPE, CR5-2APS (EK)	Video System Adjustment
8-960-096-91	ALIGNMENT TAPE, CR5-1BPS (EK)	Audio/Video System Adjustment
9-911-053-00	THICKNESS GAUGE	Clearance Check
7-651-000-50	GREASE, SILICON (G-746) 200g	—

3-15. PRECAUTIONS ON TIGHTENING THE SCREWS

(1) The Fixing Screws to the Chassis

The BVW-400/400P is compact and lightweight, so many M1.4 x 2.5 screws (1.4mm dia.) and M2 x 5 and M2 x 8 screws (2mm dia.) are employed. A magne-diecast chassis is employed.

Pay careful attention to the tightening torque when tightening the screws. Stronger torque may damage the chassis screws. The torque screwdriver and bits below are provided.

Torque driver	J-6325-400-A
Bit for M1.4	J-6325-110-A
Bit for M2	J-6325-380-A

Screw M1.4 torque: 0.9 ± 0.1kg.cm
Screw M2 torque: 3.0 ± 0.5kg.cm

The above torque driver can be used for both screws M1.4 and M2.

If you damage the chassis screws when tightening screw M1.4, use the following screw:
M1.7 x 3 (2-641-348-02)
or
M1.4 x 5 (3-729-013-71)

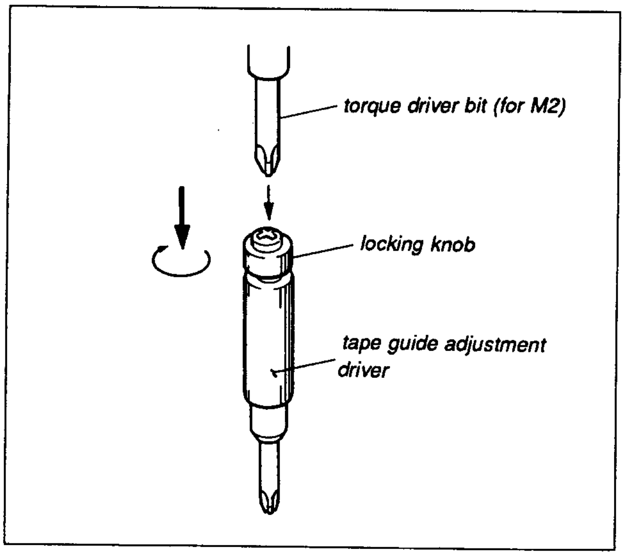
To distinguish the above screw from screw M1.4, mark the screw top in red. Apply the locking compound at the same time.

(2) The Locking Screw of the Tape Guide Upper Flange

When the height adjustment of the tape guide is performed in the Tape Run Alignment, use the tape guide adjustment driver (J-6321-500-A) prepared for the maintenance tool.
After the height adjustment of the tape guide is completed, tighten the locking screw of the tape guide upper flange with the torque driver by the following procedures.

Torque Driver	J-6325-400-A
Torque Driver Bit (For M2)	J-6325-380-A
Tightening Torque	0.9 ± 0.1 kg.cm

(a) Set the torque driver bit (for M2) on the torque driver.
(b) Set the torque driver on the screw at the top of the locking knob of the tape guide adjustment driver.
(c) Push down the torque driver and turn it clockwise.

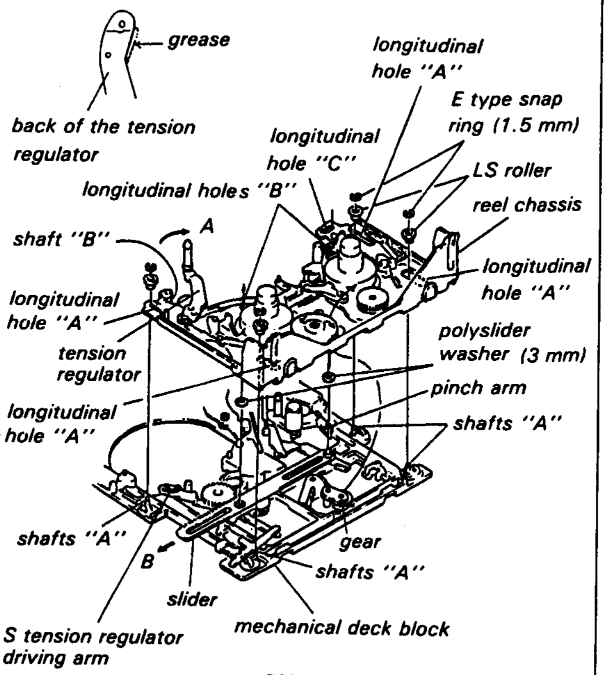


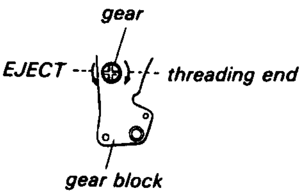
3-16. INSTALLATION OF THE REEL CHASSIS

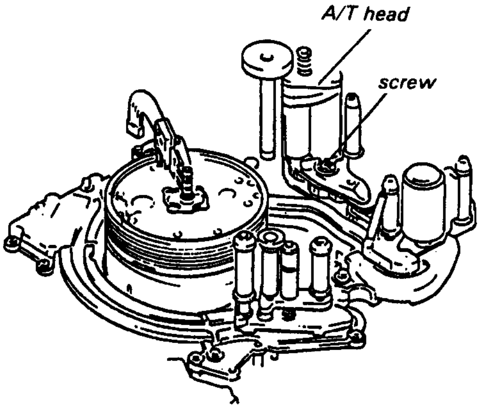
- When removing or installing the Reel Chassis, remove the Mechanical Deck Block from the unit. (Refer to Sec. 3-12. Removal of the Mechanical Deck Block.) The following is the procedure for installation of the Reel Chassis.

Tool: Sony grease
Sony oil
Mode: EJECT
Installation procedure:

(1) Smear Sony grease on the back of the Tension Regulator of the Reel Chassis Assembly as shown in the figure.
(2) Gently push the Tension Regulator Arm in the direction of the arrow A.
(3) Apply a 1/4 drop of Sony oil on each of the four shafts "A" of the Mechanical Deck Block.
(4) Move the slider in the direction of the arrow B fully by hand.
(5) Insert 3mm diameter polyslider washers (0.5mm thick) (3-701-439-21) onto the two shaft of the slider.
(6) Insert the Reel Chassis in the direction shown in the figure so that the gear is not contact with the reel chassis.
    (i) Insert the four shafts "A" of the Mechanical Deck Block into the four longitudinal holes "A" of Reel Chassis.
    (ii) Insert the two longitudinal holes "B" onto the two shafts of the Reel Chassis.
    (iii) Insert the longitudinal hole "C" of the Reel Chassis onto the Pinch Arm Roller.
    (iv) Insert the shaft "B" of the Reel Chassis into the longitudinal hole of the S Tension Regulator Driving Arm.
(7) Insert the LS Roller (3-723-007) onto the four shafts "A" of the Mechanical Deck Block as shown in the figure. Fasten with the E type stop ring (1.5mm).
(8) Turn the screw on the front of the A/T Head by the screwdriver, and repeat threading and unthreading two or three times and check that they can be done smoothly.

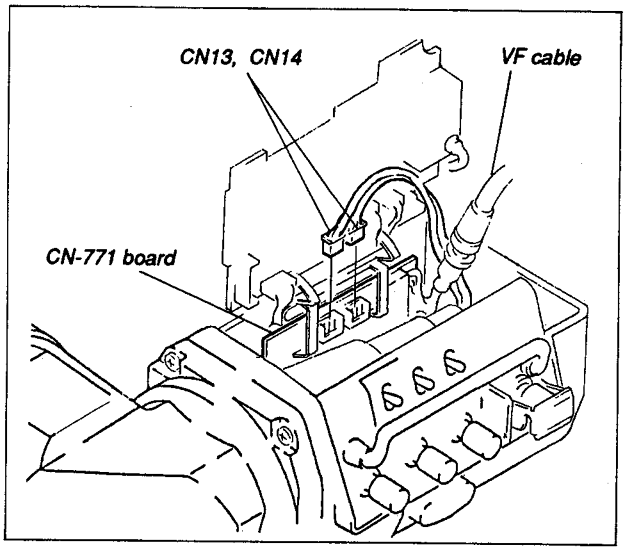

grease
back of the tension regulator
longitudinal hole "A"
E type snap ring (1.5 mm)
longitudinal hole "C"
LS roller
longitudinal holes "B"
reel chassis
shaft "B"
A
longitudinal hole "A"
longitudinal hole "A"
tension regulator
polyslider washer (3 mm)
pinch arm
longitudinal hole "A"
shafts "A"
shafts "A"
B
gear
shafts "A"
slider
S tension regulator driving arm
mechanical deck block


gear
EJECT
threading end
gear block

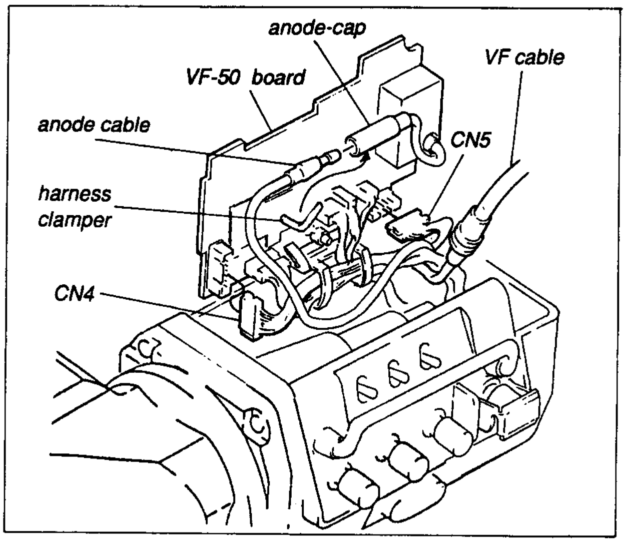

A/T head
screw

3-17. HOW TO ARRANGE THE VF HARNESS

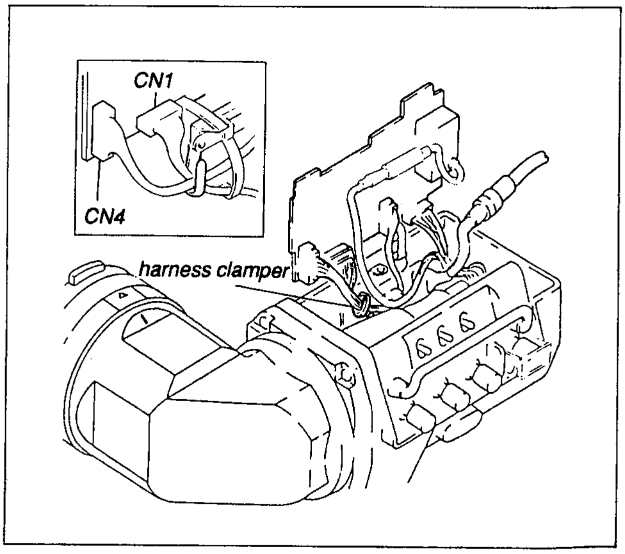
1. Connect the harness of the LP-64/65 Board to CN13 and CN14 of the CN-771 Board.
   - Arrange the harness around the back of the VF cable as shown in the figure.


CN13, CN14
VF cable
CN-771 board

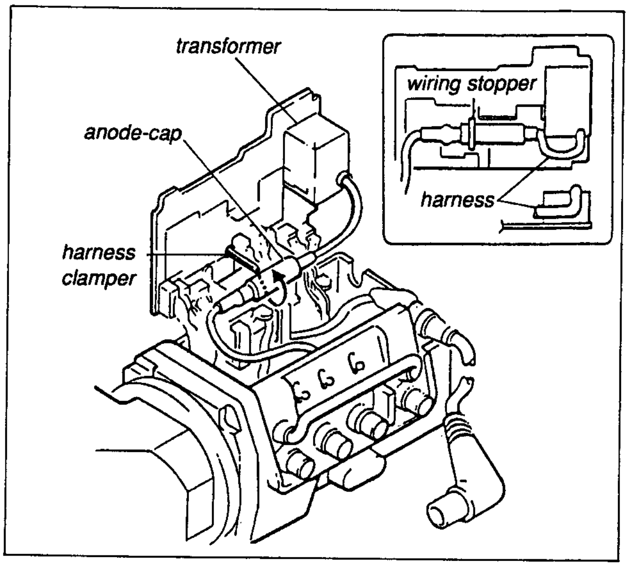
2. Connect the harness of the CRT to CN4 and CN5 of the VF-50 Board.
   - Arrange the harness around the back of the VF cable as shown in the figure.
3. Insert the anode cable into the anode-cap of the VF-50 Board until it locks.


anode-cap
VF-50 board
VF cable
anode cable
CN5
harness clamper
CN4

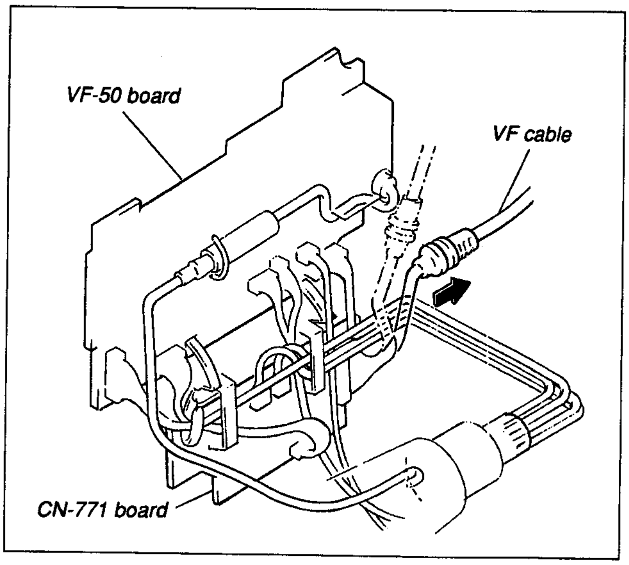
4. Clamp the harness of CN1 and CN4and anode cable with a harness clamper.


CN1
CN4
harness clamper

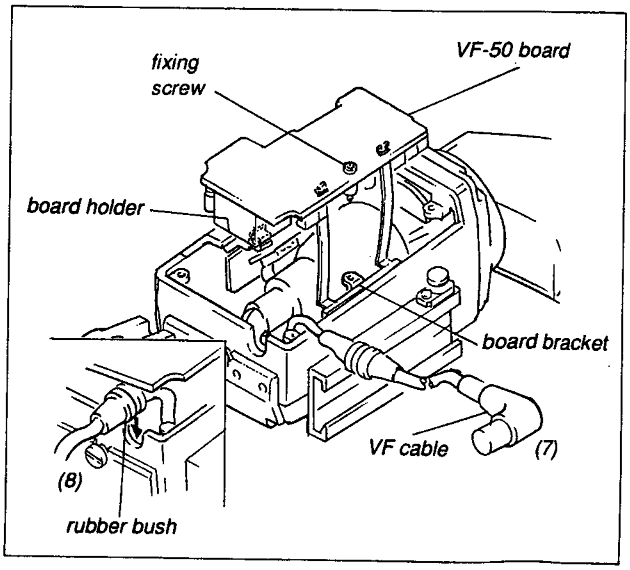
5. Clamp the anode-cap at the position shown in the figure with the harness clamper of the VF-50 Board, and arrange the harness around the side of the Transformer.


transformer
anode-cap
harness clamper
wiring stopper
harness

6. Check that the harness has been arranged as shown in the figure.
   Pull the harness of the CRT in the direction of the arrow with the VF cable.


VF-50 board
VF cable
CN-771 board

7. Insert the VF-50 Board into the Board holder with the VF cable at the position shown in the figure.
8. Adjust the rubber bush of the VF cable to the notch of the VF and insert, and close the VF-50 Board.
9. Fix the VF-50 Board onto the Board brackets with the fixing screw.


fixing screw
VF-50 board
board holder
board bracket
VF cable
(7)
(8)
rubber bush

3-18. REPLACEMENT OF THE SIDE PAD

Parts Required

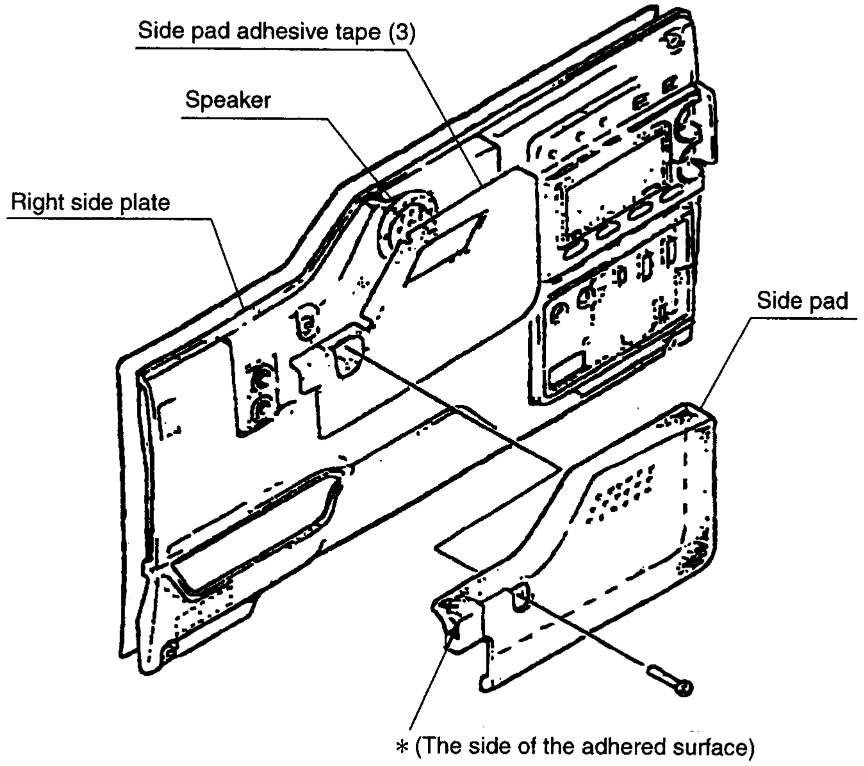
Side pad	3-724-733-02
Side pad adhesive tape (3)	3-725-293-03
Instant glue, ThreeBond 1741	7-600-002-02
Primer, ThreeBond 17X-50	7-600-002-03

Notes:

- The side pad adhesive tape (3) can be reused unless it is broken.
- 17X-50 for the primer is the official description of the 1797B.

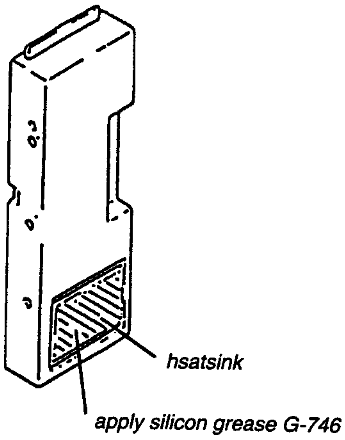
1. Clean the side pad contact surface on the right side plate with alcohol.
   (The cleaning should be performed on the right side plate where to be touched with the edge surface of the side pad.)
2. Peel off the backing sheet of the side pad adhesive tape (3) (so as to affix it to the side of the right side plate first), and affix the tape to the right side plate so as not to obstruct the speaker holes.
3. Peel off the remaining backing sheet of the side pad adhesive tape (3).
4. Clean the adhered surface of the side pad with alcohol.
5. Apply primer (Three Bond 17X-50) to overall end surface (adhered surface) and area marked * of the side pad.
6. Affix the side pad to the right side panel lightly while preventing any room.
7. Press the whole upper part of the side pad in order to remove the air bubble in the adhesive tape.
8. Apply instant glue (Three Bond 1741) to primer-coated overall end surface and area marked *.

Note for 8.:
When reusing the side pad adhesive tape (3), apply primer to overall adhered surface of the side pad, and apply instant glue to its center. Then affix it to the right side plate and perform the above step (7).


Side pad adhesive tape (3)
Speaker
Right side plate
Side pad
* (The side of the adhered surface)

3-19. NOTES FOR REPLACEMENT OF DC-DC CONVERTOR

After the DC-DC converter replacement or after pull it out or push it back, apply silicon grease G-746 (200g) (7-651-000-50) a little to the surface of the hsatsink.


hsatsink
apply silicon grease G-746

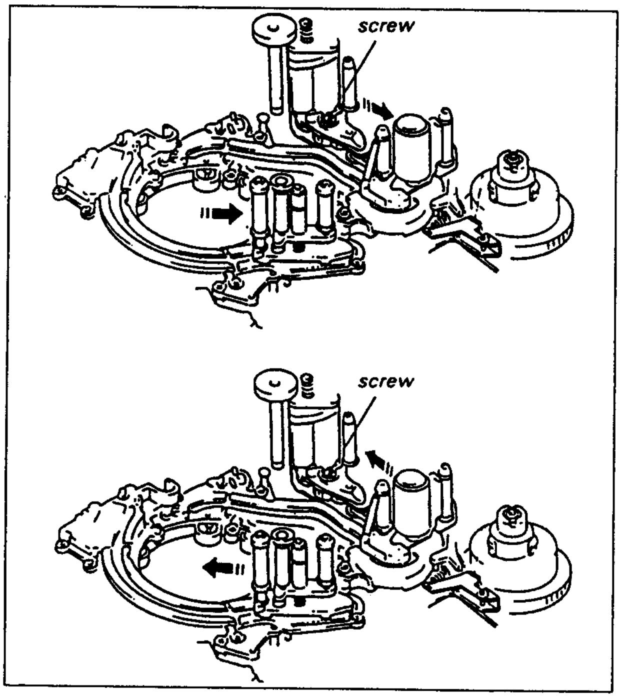
SECTION 4
REPLACEMENT OF THE MAJOR PARTS

PRECAUTIONS WHEN REPLACING PARTS

1. The mode of the unit when replacing parts is described in the Parts Replacement. The following is the description of the modes.

- EJECT: In this mode, the Pinch Roller, Tension Regulator Arm, T Base, and S Base have all completely returned to the reel table side.
  This condition can be set by turning the screw shown in the figure counterclockwise.

- Threading end:
  In this mode the Pinch Roller is placed in front of the Capstan Shaft, the T Base and S Base are in the positions of the T Support Bracket and S Support Bracket, and the Tension Regulator Arm is completely open.
  This condition can be set by turning the screw shown in the figure clockwise.



2. Replace parts with the VTR installed onto the unit, unless otherwise specified. At that time, open the Cassette-up Compartment fully. (Refer to Section 3-3).

3. The polyslider washers used to fix parts should not be used again once they have been removed. Use a new one after replacement.
   When installing a polyslider washer to the shaft, push the polyslider washer until the space between it and the part is about 0.1 to 0.2mm.
   1.2mm diameter polyslider washer:
   3-559-408-11
   1.5mm diameter polyslider washer:
   3-321-813-01

4. When tightening screws, be sure to keep the tightening torque. The torque driver and bits are provided.

J-6325-400-A	Torque driver (for 0.3N•m)
J-6325-110-A	Torque driver bit (for M1.4)
J-6325-380-A	Torque driver bit (for M2)

Tightening torque
1.4mm dia.screw: 0.09 ± 0.01N•m{0.9 ± 0.1kg•cm}
2mm dia.screw: 0.3 ± 0.05N•m{3.0 ± 0.5kg•cm}

4-1. REPLACEMENT OF THE CCD UNIT

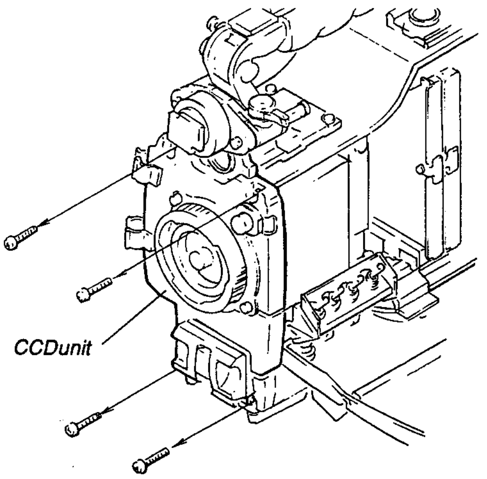
Replacement procedure:

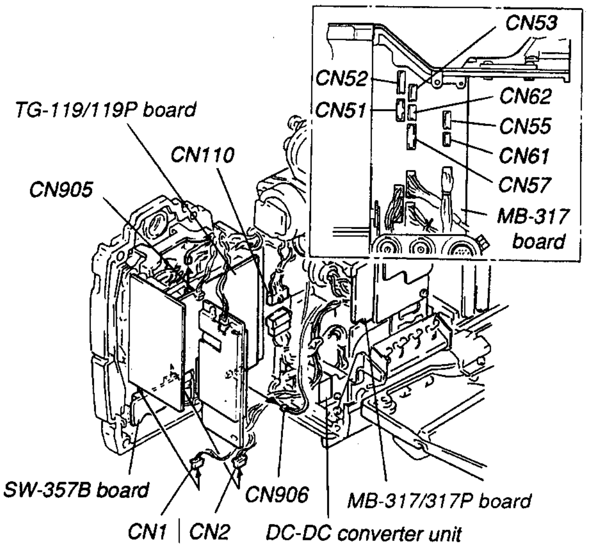
(1) Remove the viewfinder.
(2) Remove the cabinet.
(Refer to Section 3-1. Removal of the cabinet.)
(3) Remove the four screws fixing the CCD unit to the unit.
(4) Remove the CCD unit from the unit, and remove the following connectors.
- CN1,CN2/SW-357 Board
- CN905,CN906/TG-119/119P Board
- CN51,CN52,CN53
  CN55,CN57,CN61,CN62/MB-317/317P Board
- CN110/DC-DC converter unit

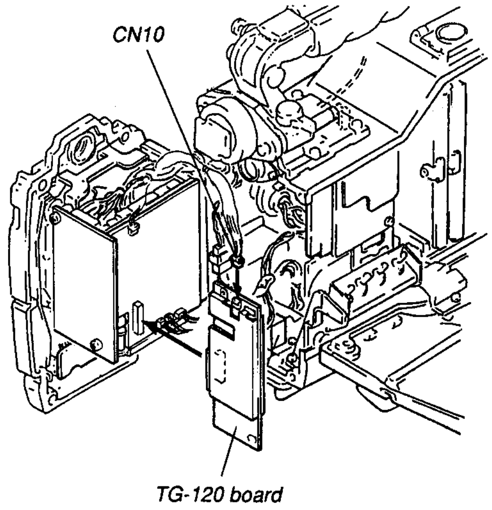
(5) Replace the CCD unit.

(Note) The CCD unit (Sony part No. A-7575-205-A: BVW-400A, A-7575-206-A: BVW-400AP) supplied as service parts is not connected to the TG-120 Board.
Before installing, firstly connect the supplied TG-120 Board CN10, and then connect the board to the CCD unit, as shown in the figure.
When replacing the CCD unit with a new one, always replace the TG-120 Board as well.

(6) Install in the reverse order of removal.




CN53
CN52
CN51
CN62
CN55
CN61
CN57
MB-317
board
TG-119/119P board
CN110
CN905
SW-357B board
CN1
CN2
CN906
DC-DC converter unit
MB-317/317P board

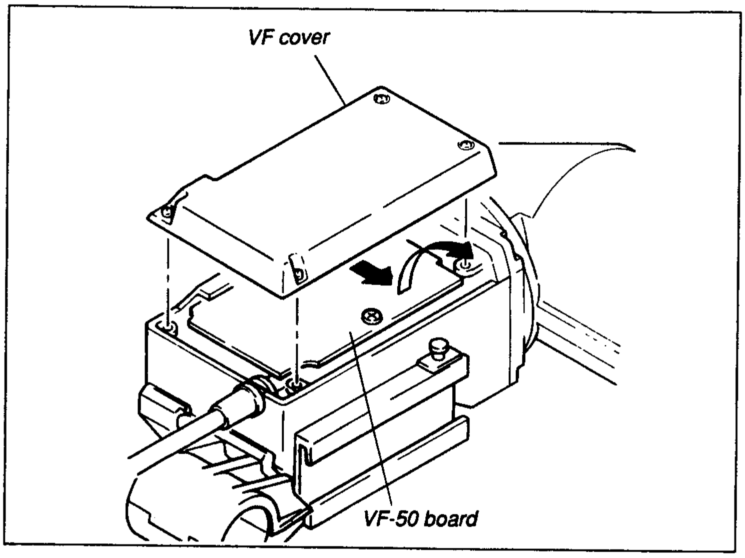

CN10
TG-120 board

4-2. REPLACEMENT OF THE VIEWFINDER CRT

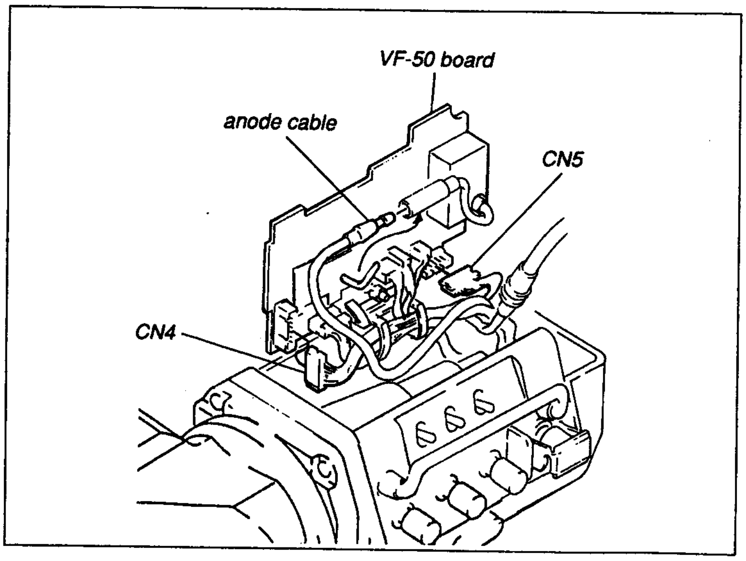
Replacement procedure:

(1) Loosen the four screws, and remove the VF cover.

(2) Loosen the screw fixing the VF-50 Board, and open the Board while moving it in the direction of the arrow.

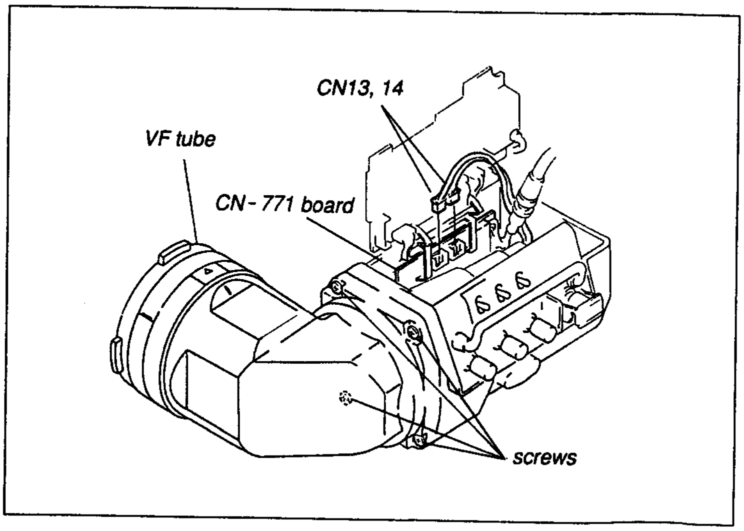

VF cover
VF-50 board

(3) Disconnect connectors CN4, CN5 and the anode cable from the VF-50 Board.


VF-50 board
anode cable
CN5
CN4

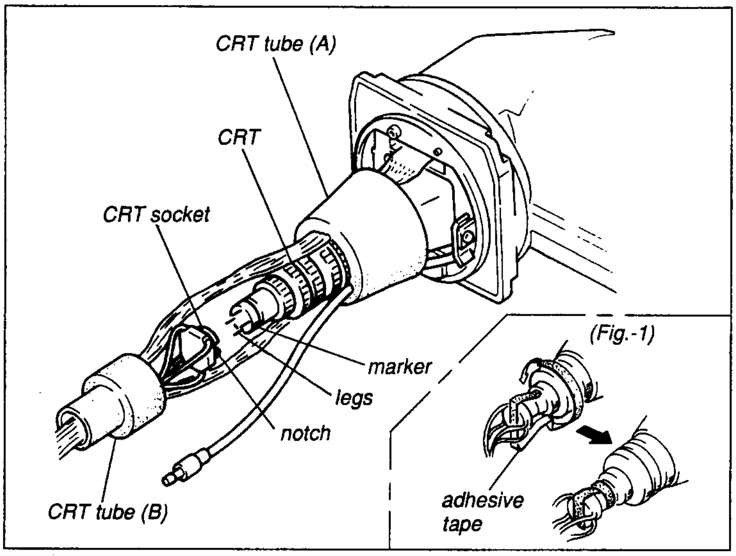
(4) Disconnect connectors CN13 and CN14 from the CN-771 Board.

(5) Loosen the four screws shown in the figure, and remove the VF Tube from the VF unit.

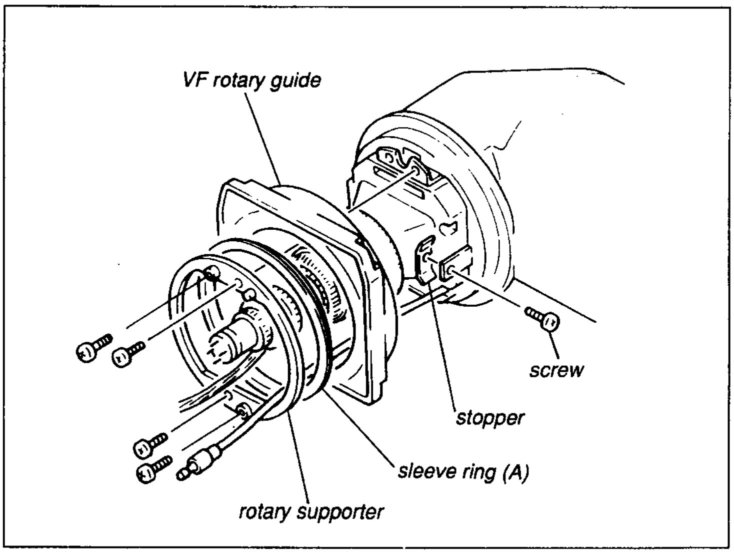

CN13, 14
VF tube
CN-771 board
screws

(6) Remove the CRT tubes (A) and (B), and remove the CRT socket from the CRT.

(Note) When installing the CRT socket, adjust the CRT marker to the notch of the CRT socket.
Be careful not to bend the four legs of the CRT.
After installing the CRT socket, fasten by winding adhesive tape around the neck part and socket part.
(Refer to Fig. -1.)

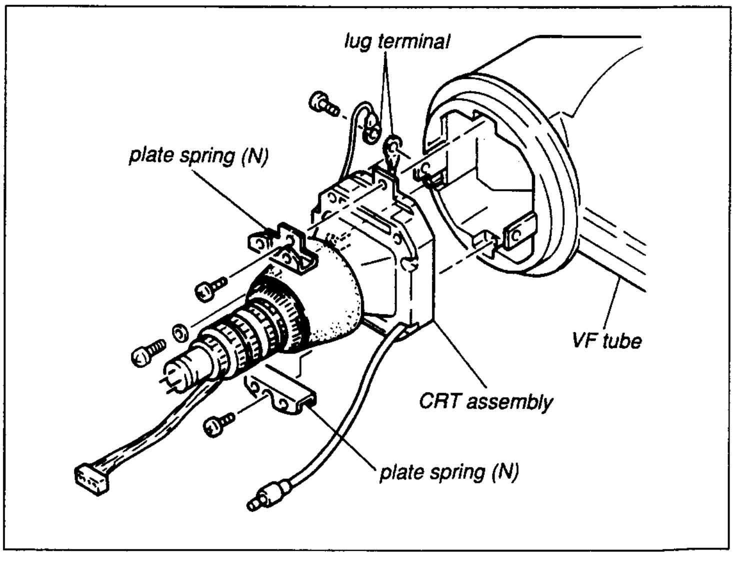

CRT tube (A)
CRT
CRT socket
marker
legs
notch
CRT tube (B)
(Fig.-1)
adhesive tape

(7) Remove the screw and the stopper.
Remove the four screws, and remove the Rotary Support, Sleeve Ring (A) and VF Rotary Guide.


VF rotary guide
screw
stopper
sleeve ring (A)
rotary supporter

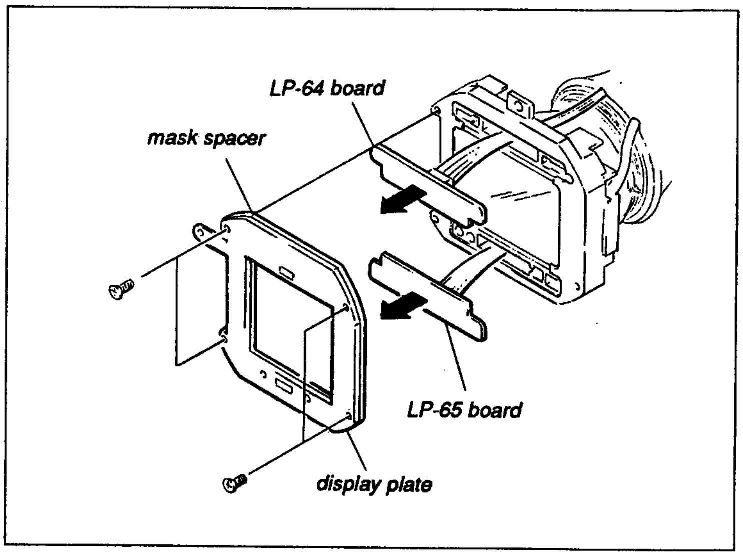
(8) Remove each screw fixing the lug terminal and Display Plate.

(9) Remove the two Plate Springs (N), and remove the CRT assembly from the VF tube.


lug terminal
plate spring (N)
VF tube
CRT assembly
plate spring (N)

(10) Remove the four screws, and remove the mask spacer with Display Plate from the CRT.
(11) Remove the LP-64/65 Board in the direction of the arrow.
(12) Replace the CRT.
(13) After replacing, install in the reverse order of removal.

(Note) When installing, pay full attention to the arrangement of the harness.
(Refer to 3-17. How to Arrange the VF Harness.)
If it is incorrectly arranged, the harness may easily break, etc. when using the VF.
Insert the anode cable relay connector until it locks.



4-3. REPLACEMENT OF THE VF CONNECTOR

Replacement procedure:

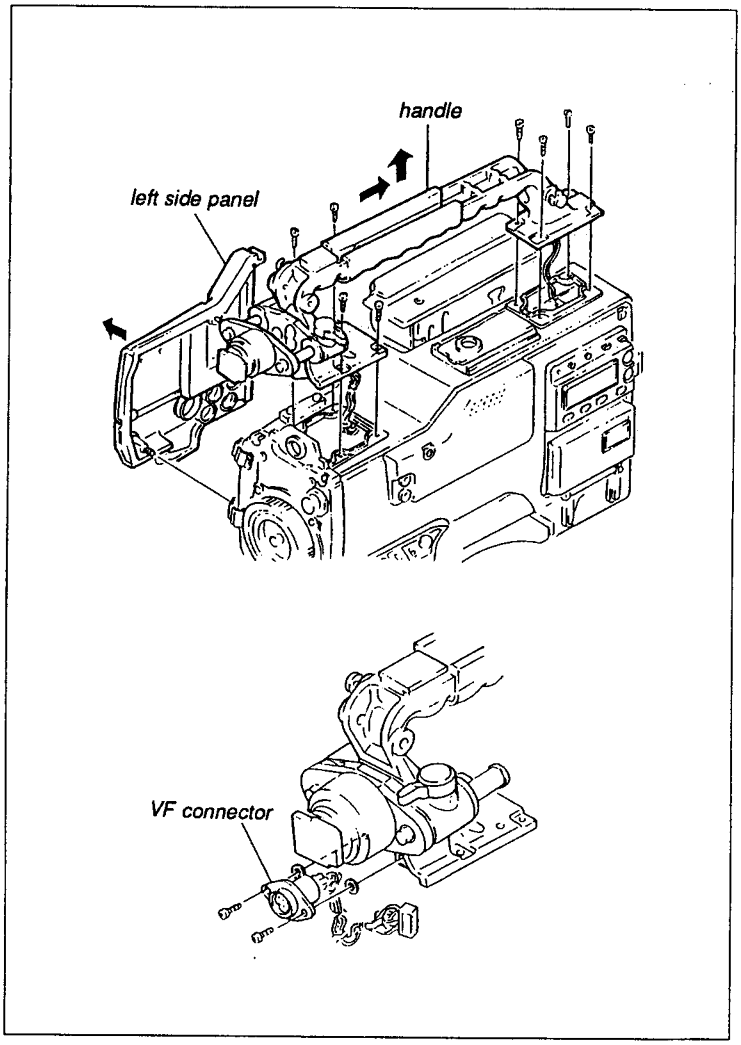
(1) Open the Cassette-up Compartment Lid (put the unit into EJECT mode), remove the left side panel.

(2) Move the Viewfinder forwards.

(3) Remove the fixing screws shown in the figure and remove the handle.

(4) Remove the two screws fixing the VF connector onto the handle and disconnect the CN50 on the MB-317/317P Board and CN905 on the TG-119 Board, then remove the VF connector with the harnesses.

(5) Assemble the VF connector by reversing steps for removal.



4-4. REPLACEMENT OF THE LENS CONNECTOR

Replacement procedure:

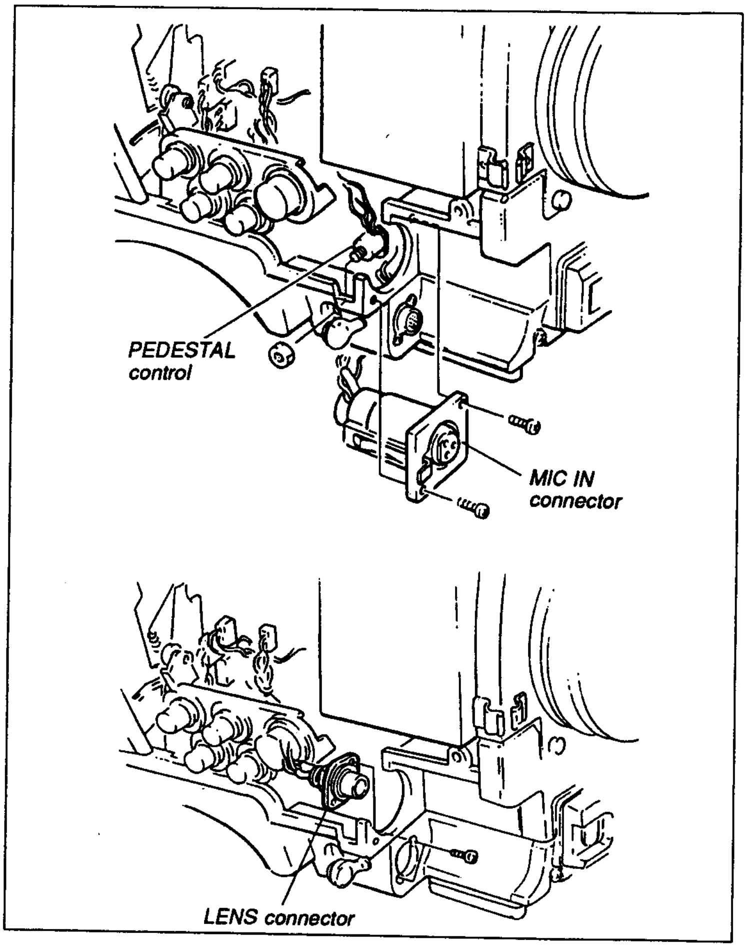
(1) Open the Cassette-up Compartment Lid (put the unit into EJECT mode), remove the left side panel.

(2) Remove the two fixing screws and disconnect the CN25 on the MB-317/317P Board, and then remove the MIC IN connector.

(3) Disconnect the CN22 on the MB-317/317P Board and remove the PEDESTAL control.

(4) Remove the two fixing screws and disconnect the CN58 on the MB-317/317P Board and CN906 on the TG-119 Board, and then remove the LENS connector.

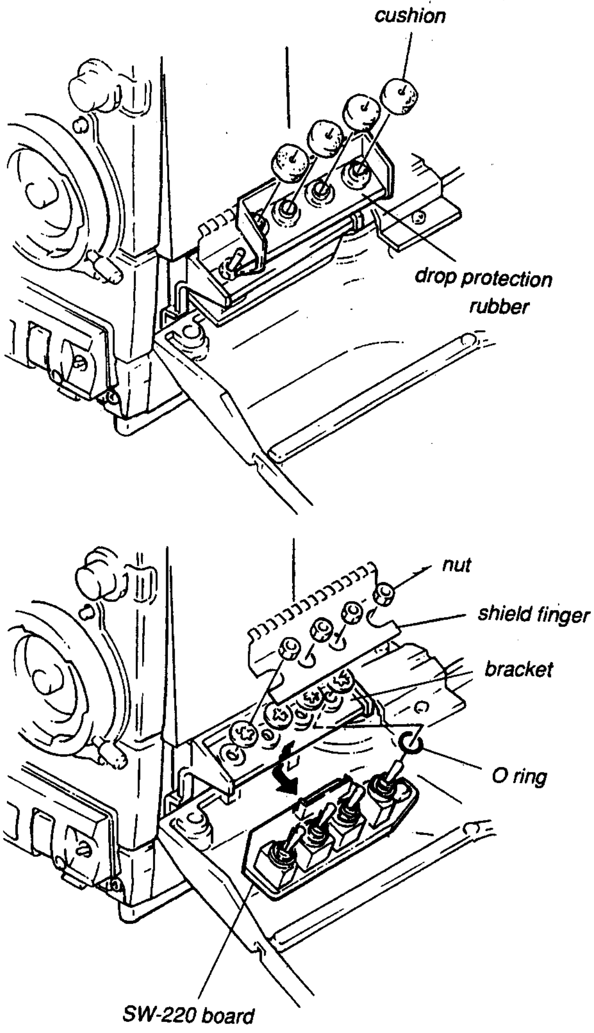
(5) Assemble the new LENS connector by reversing steps for removal.



4-5. REPLACEMENT OF THE FUNCTION SWITCH

Replacement procedure:

(1) Open the right side panel.
(2) Remove the cushions of each switch.
(3) Remove the Drop Protection Rubber.
(4) Remove the nut fixing the switch with the box driver, and remove the Shield Finger.
(5) Remove the SW-220 Board in the directions of the arrow in the figure.
(6) Remove the defective switch from the SW-220 Board and replace the new switch.
(7) Confirm that the O Ring is installed between each switch and the bracket, then, assemble the switch by reversing steps for removal. (O Ring is supplied with switch.)


cushion
drop protection rubber
nut
shield finger
bracket
O ring
SW-220 board

4-6. REPLACEMENT OF THE DRUM ASSEMBLY

- When replacing the Drum Assembly, careful not to touch the Video Head.

Tool: Tweezers
Mode: EJECT
Replacement procedure:

(1) Disconnect the flexible board (FL-54 Board) of the Slip Ring which is connected to CN5 on the TB-5 Board with tweezers. (Refer to Section 3-9.)

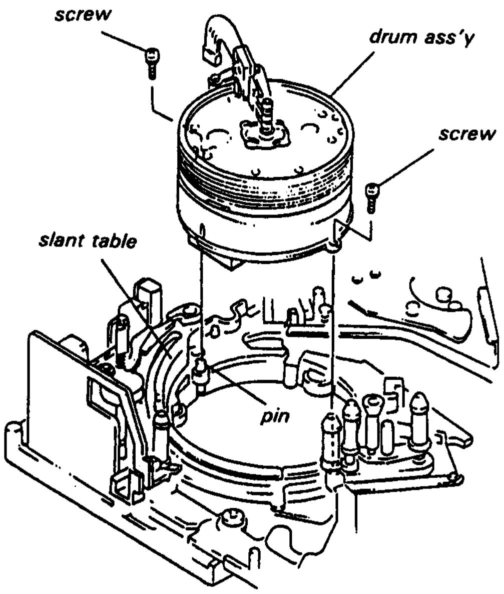
(2) Remove the two fixing screws of the Drum Assembly and remove the Drum Assembly from the unit. When removing, raise the Drum Assembly straightly up so that disconnect the connectors CN41 and CN42 at the bottom of the drum which are inserted into the mother board (MB-317/317P Board).

(3) Install the new Drum Assembly in the unit so that the Slant Table Pin is installed into the hole of the new Drum Assembly.

(4) Tighten the fixing screw at the Reel Table side of the Drum Assembly, then tighten the fixing screw at the CTL Head side.

(5) Insert and lock the flexible board (FL-54 Board) of the slip Ring into connector CN5 on the TB-5 Board with tweezers. (Refer to Section 3-9.)

(6) After replacement, perform the adjustments in Section 4-42.



4-7. REPLACEMENT OF THE UPPER DRUM ASSEMBLY

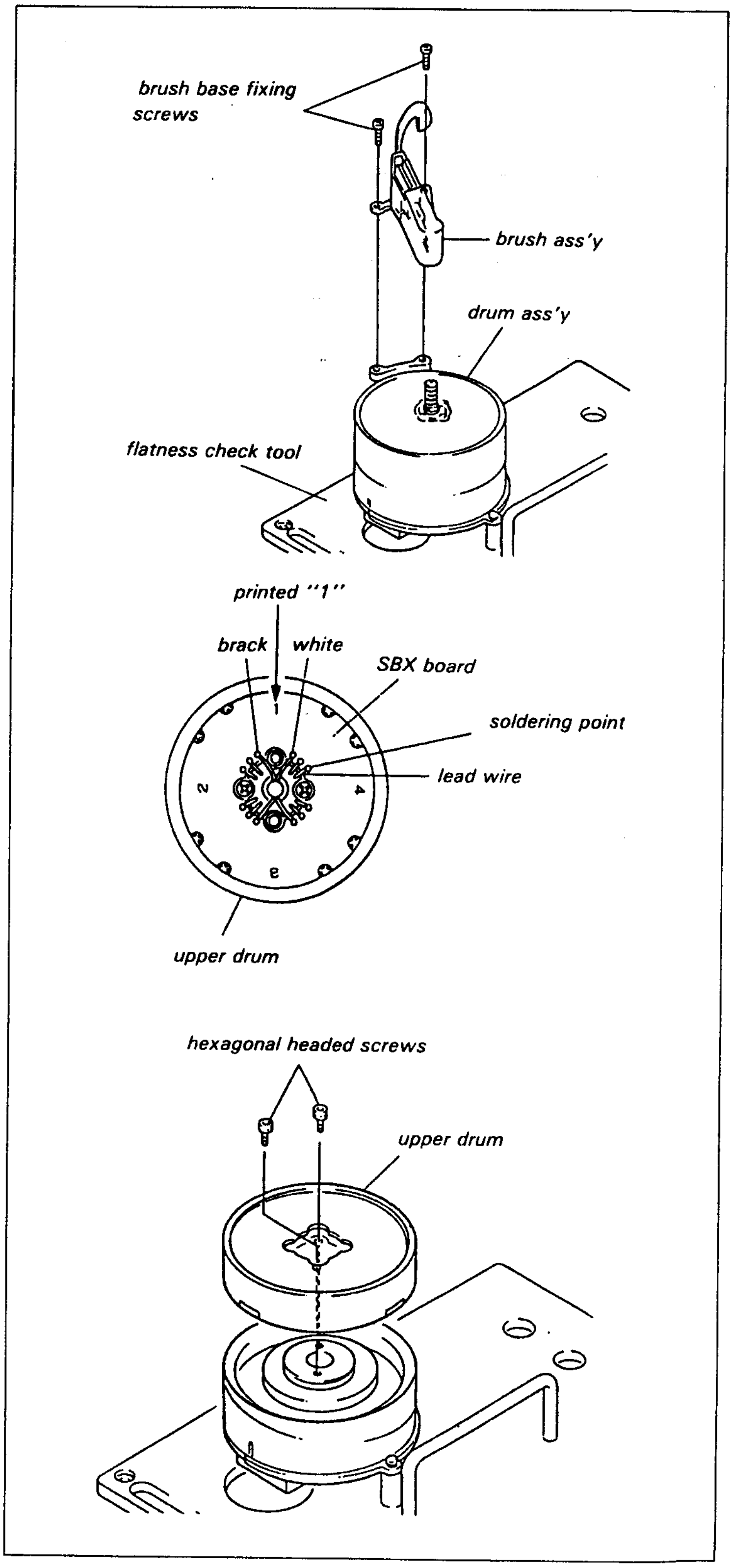
- When replacing the Upper Drum Assembly, be careful not to touch the Video Head.

Tool: Flatness check tool
Drum eccentricity gauge (3)
Drum eccentricity gauge (2)
Drum eccentricity gauge (6)
Tweezers
L-shaped hexagonal wrench (across flat has 1.5mm)

Mode: EJECT

Replacement procedure:

(1) Remove the Drum Assembly from the unit as described in Steps (1) and (2) in Section 4-6.
(2) Install the Drum Assembly on the flatness check tool.
(3) Remove the two brush base fixing screws and remove the Brush Assembly from the Drum Assembly.
(4) Remove the two hexagonal headed screws from the Upper Drum Assembly with the L-shaped hexagonal wrench, then remove the Upper Drum Assembly from the Drum Assembly.
(5) Remove the Slip Ring Assembly from the removed Upper Drum Assembly as described in Section 4-8.
(6) Put the new Upper Drum Assembly on the flange.
(7) Thread the hexagonal headed screws on the new Upper Drum Assembly to the flange snugly but do not tighten.


brush base fixing screws
brush ass'y
drum ass'y
flatness check tool
printed "1"
brack
white
SBX board
soldering point
lead wire
1
2
3
4
upper drum
hexagonal headed screws
upper drum

(8) Assemble the drum eccentricity guages (3),(2),(6), and install them on the flatness check tool.

(9) Adjust the position of gauge so that the tip probe is positioned at the point about 2mm from the top edge of the Upper Drum.

(10) Turn the Upper Drum Assembly slowly clockwise and confirm that the pointer deflection of the gauge is within 3 microns during one complete turn.
If the specification is satisfied, perform Step (12) and later. If not, Perform Step (11) and later.

(11) To satisfy the specification, adjust the position of the upper drum assembly by moving it manually.

(12) After adjustment, alternately tighten the two hexagonal headed screws.

(13) Confirm that the specification is satisfied once again.

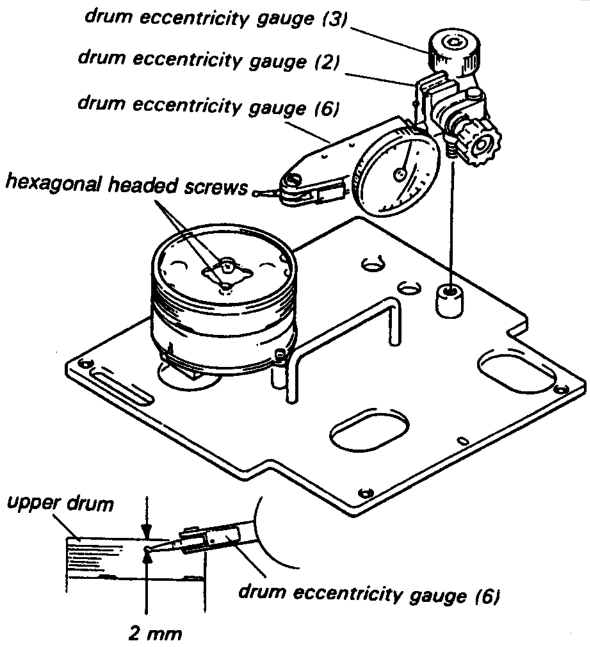
(14) Install the Slip Ring Assembly removed in Step (5) as described in Section 4-8.

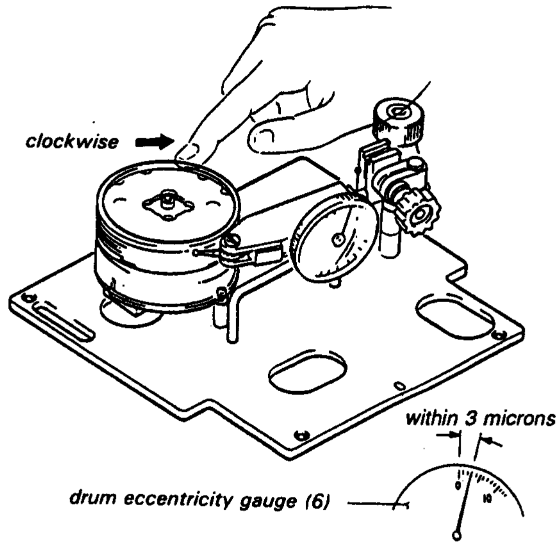
(15) Install the Brush Assembly.

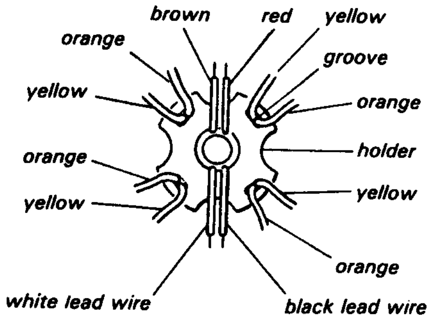
(16) Perform the Brush Position Adjustment in Section 6-16-1.

(17) Remove the Drum Assembly from the flatness check tool.

(18) Perform steps (3) through (6) in Section 4-6.


drum eccentricity gauge (3)
drum eccentricity gauge (2)
drum eccentricity gauge (6)
hexagonal headed screws
upper drum
drum eccentricity gauge (6)
2 mm


clockwise
within 3 microns
drum eccentricity gauge (6)
0
10

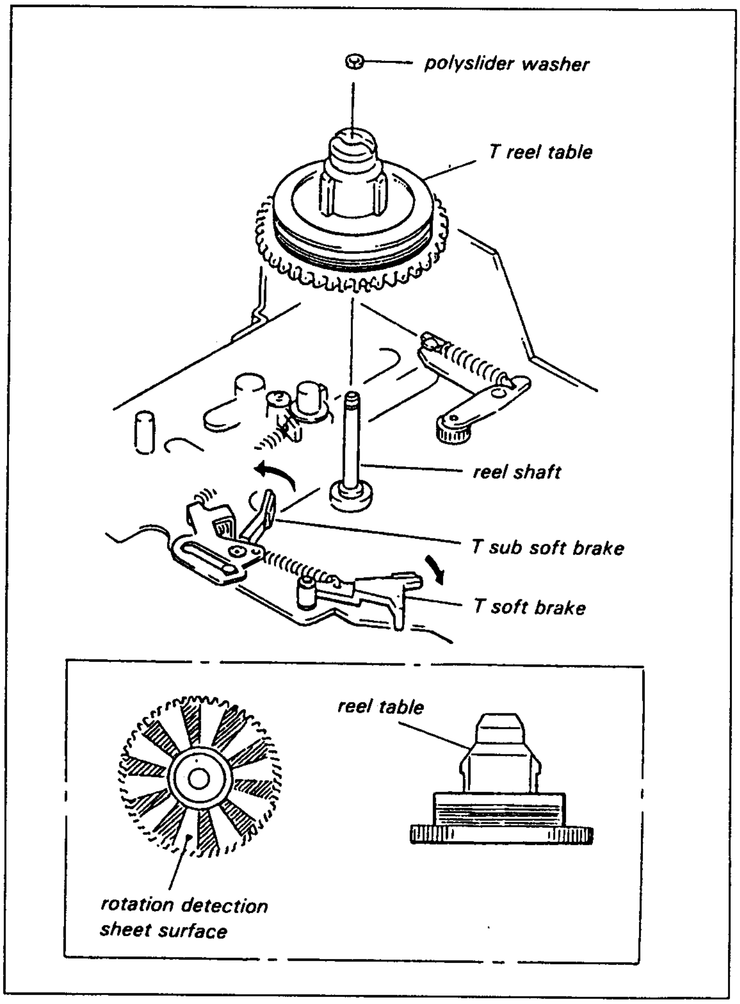

brown
red
yellow
orange
groove
yellow
orange
orange
holder
yellow
yellow
orange
white lead wire
black lead wire

4-9. REPLACEMENT OF THE TAKE-UP SIDE REEL TABLE

Mode: EJECT

Replacement:

(1) Remove the Brake Slider refering to Section 4-17.
(2) Remove the polyslider washer at the top of the T Reel Table.
(3) Release the pressures of the T Sub Soft Brake and T Soft Brake from the T Reel Table while pressing them in the direction of the arrows, and remove the T Reel Table from the unit.
(4) Clean the reel shaft with a cleaning piece moistened with cleaning fluid.
(5) Clean the Rotation Detection Sheet surface of the new T Reel Table and the reel table's outer circumference with a cleaning piece moistened with cleaning fluid.
(6) Release the T Sub Soft Brake and T Soft Brake as in Step (3), insert the T Reel Table onto the Reel Shaft, and fasten it with the 1.2mm diameter polyslider washer.
(7) While releasing the T Sub Soft Brake, rotate the T Reel Table by hand to check that it rotates smoothly.
(8) Install the Brake Slider refering to Section 4-17.
(9) After replacement, while releasing the T Soft Brake and T Sub Soft Brake, rotate the T Reel Table, and check that it rotates smoothly.



4-10. REPLACEMENT OF THE SUPPLY SIDE REEL TABLE

Mode: EJECT

Replacement procedure:

(1) Remove the polyslider washer (shown in the figure) fixing the Tension Regulator Band.

(2) Remove the polyslider washer at the top of the S Reel Table.

(3) Release the pressure of the S Soft Brake from the S Reel Table while pressing it in the direction of the arrow, and remove the S Reel Table from the unit.

(4) Clean the reel shaft with a cleaning piece moistened with cleaning fluid.

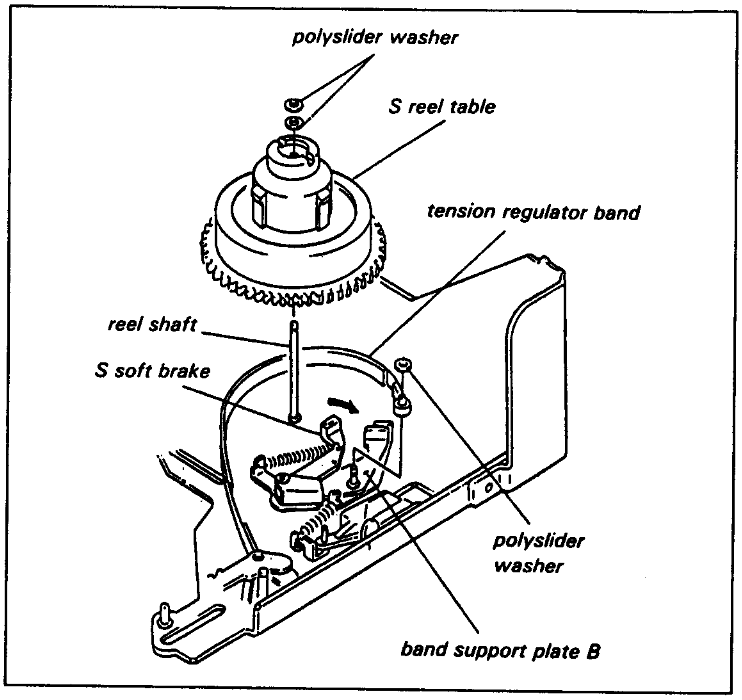
(5) Clean the Rotation Detection Sheet surface of the a new S Reel Table and the reel table's outer circumference with a cleaning piece moistened with cleaning fluid.

(6) Release the S Soft Brake as in Step (3), insert the S Reel Table onto the reel shaft, and fasten it with the 2mm diameter polyslider washer and the 1.2mm diameter polyslider washer.

(7) Insert the Tension Regulator Band onto the shaft of the Band Support B Assembly and fasten it with the 1.2mm diameter polyslider washer.

(8) After replacement, while releasing the S Soft Brake, rotate the S Reel Table by hand to check that it rotates smoothly.

(9) After replacement, perform the adjustments in Section 4-42.

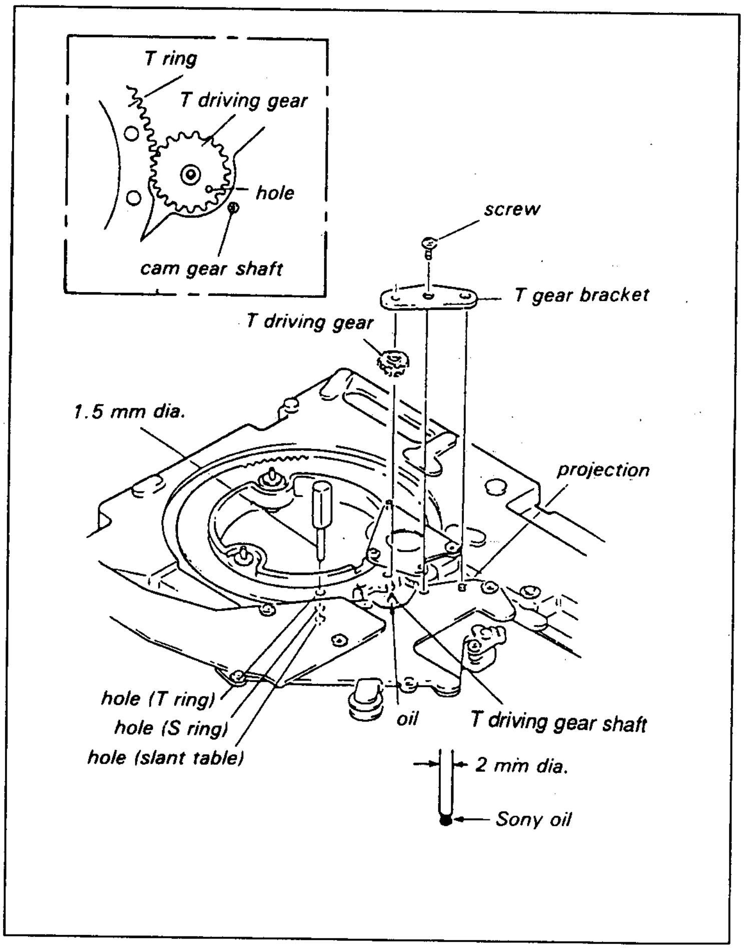


4-11. REPLACEMENT OF THE TAKE-UP SIDE DRIVING GEAR

- When replacing the T Driving Gear, remove the Mechanical Deck Block from the unit. (Refer to Section 3-12.)

Tool: 1.5mm diameter rod
Mode: EJECT
Replacement procedure:

(1) Remove the Mechanical Deck Block from the unit. (Refer to Section 3-12.)
(2) Remove a fixing screw of the T Gear Bracket and remove the T Gear Bracket and T Driving Gear from the back of the Mechanical Deck Block.
(3) Clean the T Driving Gear Shaft with a cleaning piece moistened with cleaning fluid.
(4) Apply a half drop of Sony oil on the above shaft. (One drop of Sony oil is about amount that remains on the tip of 2mm diameter rod dipped in oil.)
(5) Align the three holes (1.5mm dia.) of the Threading Ring (take-up side), Threading Ring (supply side), and Slant Table, then pass a rod (1.5mm dia.) through the holes.
(6) Insert the T Driving Gear onto the shaft so that the positional relationship between the T Driving Gear hole and Cam Gear Shaft are aligned as shown in the detail figure.
(7) Install the T Gear Bracket with a fixing screw.
(8) Repeat threading and unthreading two or three times and check that they can be done smoothly.

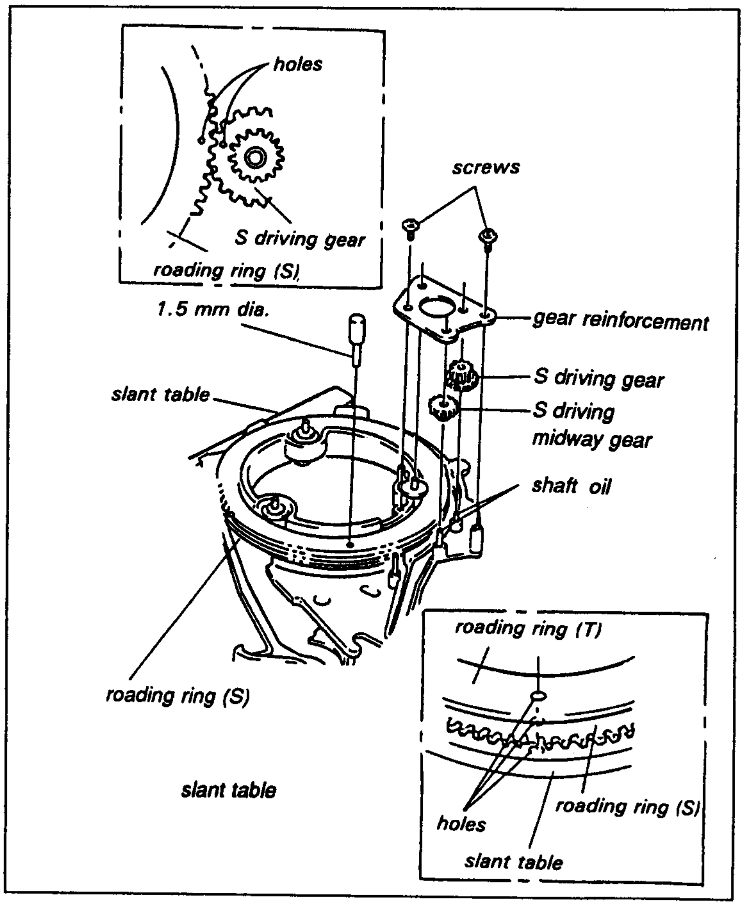

T ring
T driving gear
hole
cam gear shaft
screw
T gear bracket
T driving gear
1.5 mm dia.
projection
hole (T ring)
hole (S ring)
hole (slant table)
oil
T driving gear shaft
2 mm dia.
Sony oil

4-12. REPLACEMENT OF THE SUPPLY SIDE DRIVING GEAR

- When replacing the S Driving Gear, remove the Mechanical Deck Block from the unit. (Refer to Section 3-12.)

Tool: 1.5mm diameter rod
Mode: EJECT
Replacement procedure:

(1) Remove the Mechanical Deck Block from the unit. (Refer to Section 3-12.)
(2) Remove the two fixing screws of the Gear Reinforcement, and then remove the Gear Reinforcement, S Driving Midway Gear, and S Driving Gear from the back of the Mechanical Deck Block.
(3) Clean the S Driving Midway Gear and S Driving Gear Shafts with a cleaning piece moistened with cleaning fluid.
(4) Apply a half drop of Sony oil on the above two shafts.
(5) Align the three holes (1.5mm dia.) of the Threading Ring (take-up side), Threading Ring (supply side), and Slant Table, then pass one rod (1.5mm dia.) through the holes.
(6) Insert the S Driving Gear onto the shaft so that the positional relationship between the S Driving Gear hole and Threading Ring (supply side) hole are aligned as shown in the detail figure.
(7) Insert the S Driving Midway Gear and install the Gear Reinforcement with two fixing screws.
(8) Repeat threading and unthreading two or three times and check that they can be done smoothly.


holes
S driving gear
roading ring (S)
screws
1.5 mm dia.
gear reinforcement
S driving gear
S driving midway gear
slant table
shaft oil
roading ring (S)
slant table
roading ring (T)
holes
roading ring (S)
slant table

4-13. REPLACEMENT OF THE GEAR ASSEMBLY

Mode: EJECT

Replacement procedure:

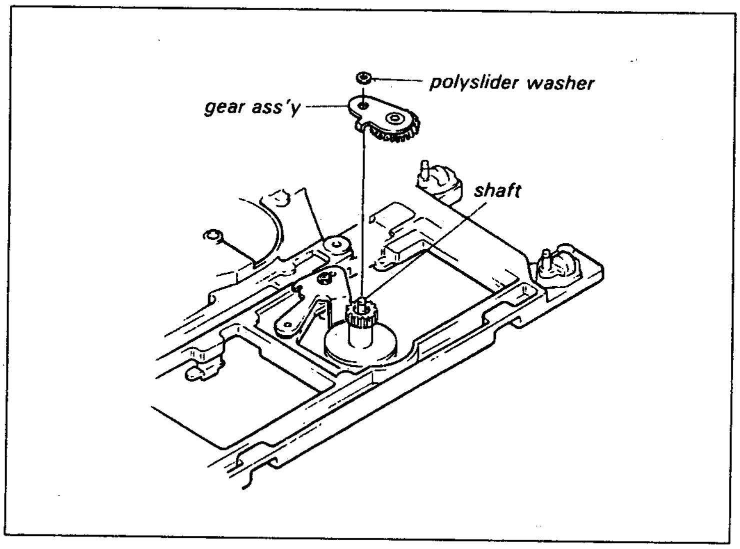
(1) Remove the polyslider washer at the top of the Gear Assembly.

(2) Clean the shaft of the Gear Assembly with a cleaning piece moistened with cleaning fluid.

(3) Insert the new Gear Assembly onto the shaft, push a polyslider washer onto the shaft, and fasten the Gear Assembly.

(4) Perform the PLAY, F.FWD, and REW operations two or three times and check that they can be done smoothly.

(5) After replacement, perform the Gear Assembly Position Adjustment in Section 5-1.



4-14. REPLACEMENT OF THE SUPPLY/TAKE-UP SIDE IDLER

- Since the S and T Idlers are replaced in the same manner, only replacement of the S Idler is described below.

Mode: EJECT

Replacement procedure:

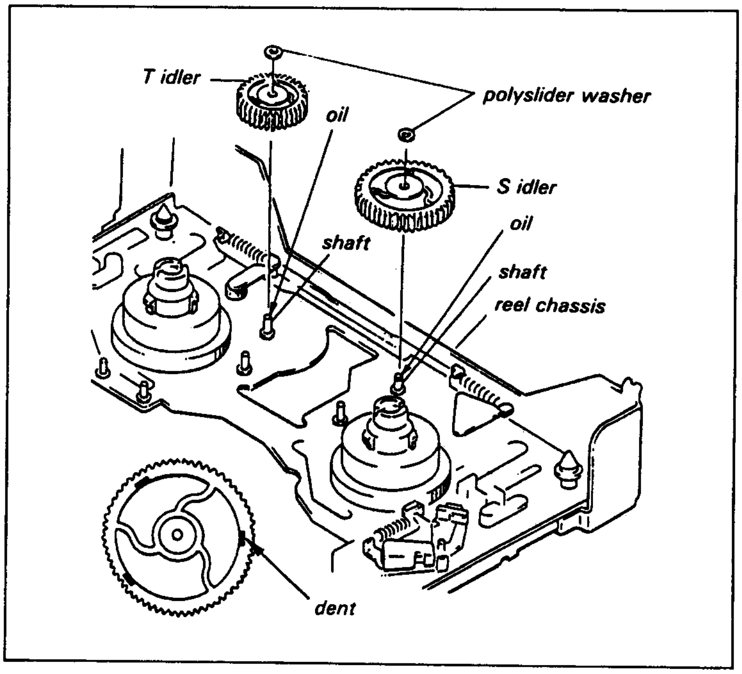
(1) Remove the polyslider washer and remove the S Side Idler from the unit.

(2) Clean the Reel Shaft with a cleaning piece moistened with cleaning fluid.

(3) Apply a 1/4 drop of Sony oil on the shaft.

(4) As shown in the figure, install the S Idler in the unit with the S Idler surface's three dents faced to the reel chassis (the lower position).

(5) Fasten the S Idler with the 1.2mm diameter polyslider washer.


T idler
polyslider washer
oil
S idler
oil
shaft
shaft
reel chassis
dent

4-15. REPLACEMENT OF THE TENSION REGULATOR BAND

- When replacing the Tension Regulator Band, be careful not to touch or bend the band felt portion.

Tool: Tweezers

Mode: Theading end

Replacement procedure:

(1) Put the unit into the threading end mode. (Refer to the Precautions when Replacing Parts.)

(2) Remove the polyslider washer shown in the figure.

(3) Push the Arm Hook of the Tension Regulator Band in the opposite direction of the arrow B.

(4) Insert twezzers into the hole of the Tension Regulator Arm shown in the figure, and hold the hook and push it in the direction of the arrow C, then remove the Tension Regulator Band.

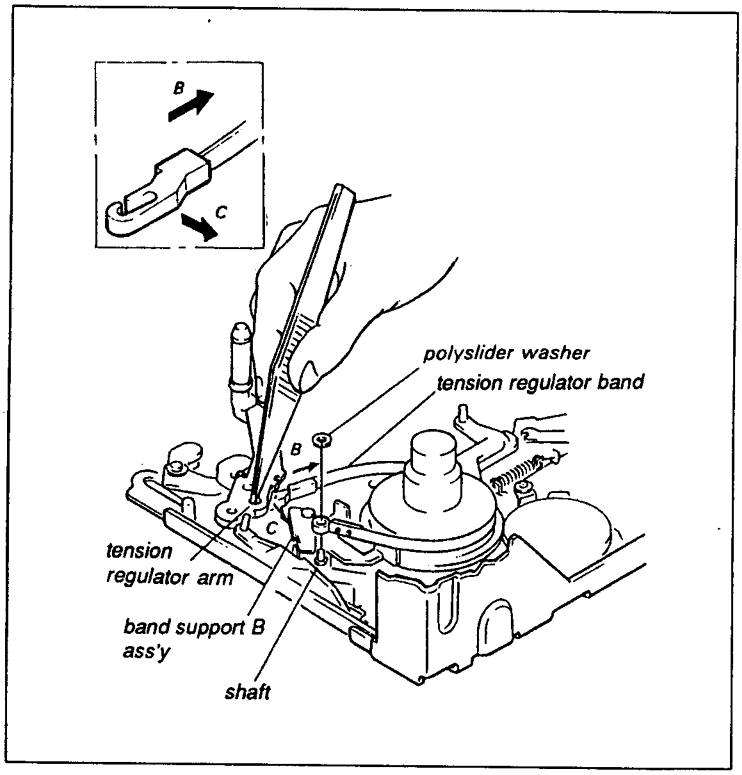
(5) Insert the hook of a new Tension Regulator Band into the lower portion of the Tension Arm in the direction indicated by the figure and push the hook in the opposite direction of the arrow C to lock it to the pin.

(6) Pull the hook of the Tension Regulator band in the direction of the arrow B.

(7) Taking care not to bend the Tension Regulator Band, wind it around the S Reel.

(8) Insert another hook of the Tension Regulator Band onto the shaft of the Band Support B Assembly and fasten it with 1.2mm diameter polyslider washer onto the shaft.

(9) After replacement, perform the adjustments in Section 4-42.



4-16. REPLACEMENT OF THE TENSION REGULATOR

- When replacing the Tension Regulator, remove the Tension Regulator Band from the unit. Be careful not to touch or bend the band felt portion.

Mode: EJECT

Replacement procedure:

(1) Remove the polyslider washer fixing the Tension Regulator Band.

(2) Remove the spring shown in the figure from the S Tension Regulator Spring Bracket.

(3) Remove the two fixing screws of the Tension Regulator and remove the Tension Regulator from the unit.

(4) Remove the spring (removed in Step (2)) from the removed Tension Regulator and install it on the new Tension Regulator in the direction as shown in the figure.

(5) Remove the Tension Regulator Band from the removed Tension Regulator and install it on the new Tension Regulator in the direction shown in the figure. After installation, pull the band in the direction of the arrow B.

(6) Align the hole of the Tension Regulator Driving Bracket with the reel chassis hole.

(7) Insert the Tension Regulator Boss into the reel chassis hole. Adjust the Tension Regulator position so that the Driving Bracket Shaft is inserted into the illustrated hole of the Tension Regulator.

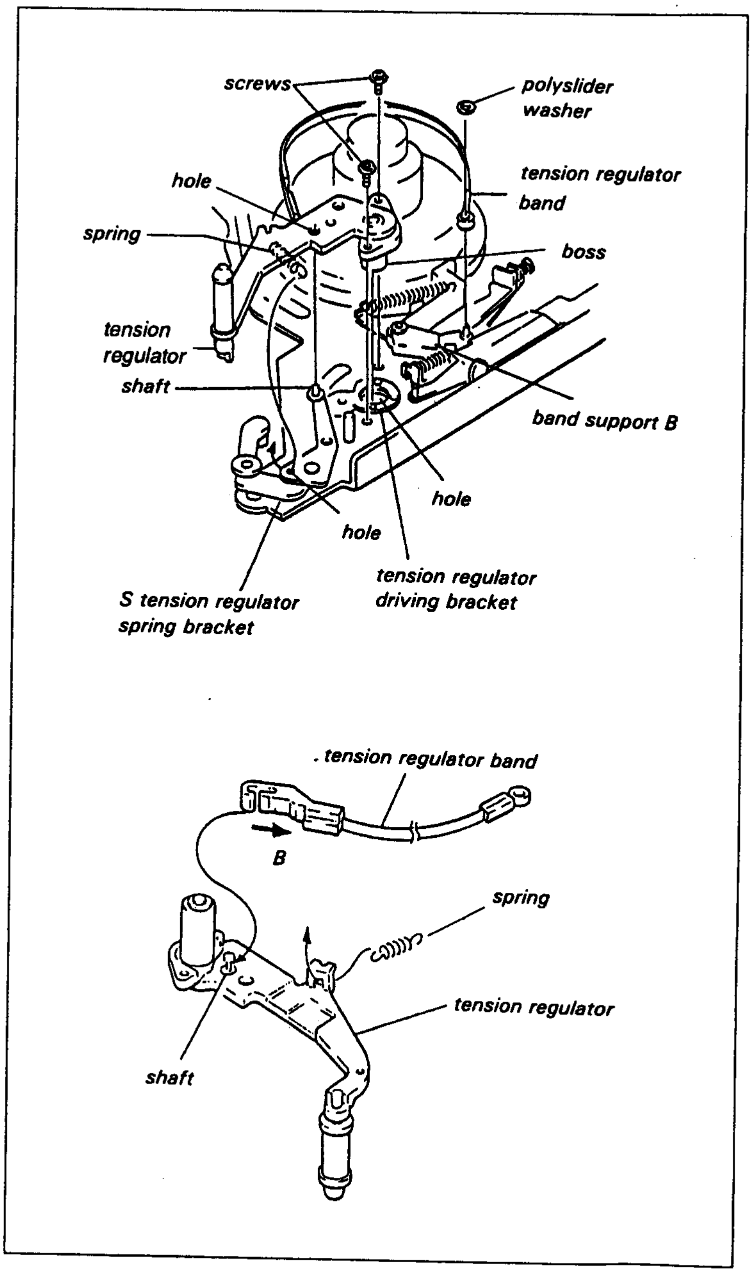
(8) Install the Tension Regulator with the two screws.

(9) Install the spring (removed in Step (2)) on the S Tension Regulator Spring bracket in the direction as shown in the figure.

(10) Being careful not to bend the Tension Regulator Band, wind it around the S Reel.

(11) Insert the other hook of the band onto the shaft of the Band Support B Assembly and insert the 1.2mm diameter polyslider washer onto the shaft.

(12) After replacement, perform the adjustments in Section 4-42.


screws
polyslider washer
hole
tension regulator band
spring
boss
tension regulator shaft
band support B
hole
hole
S tension regulator spring bracket
tension regulator driving bracket
tension regulator band
B
spring
tension regulator
shaft

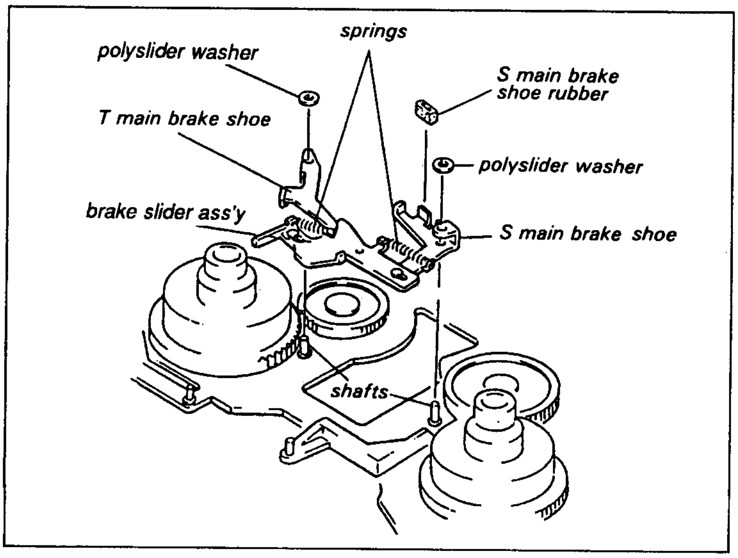
4-17. REPLACEMENT OF THE MAIN BRAKE SHOE

Mode: EJECT

Replacement procedure:

(1) Remove the T or S Brake Shoe Rubber.

(2) Install the new Brake Shoe Rubber.


springs
polyslider washer
S main brake shoe rubber
T main brake shoe
polyslider washer
brake slider ass'y
S main brake shoe
shafts

4-18. REPLACEMENT OF THE TAKE-UP SIDE SOFT BRAKE

Mode: EJECT

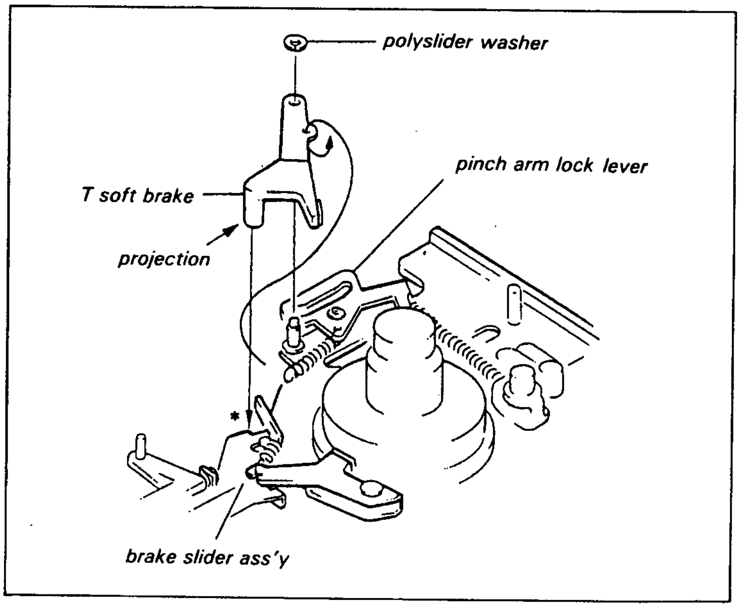
Replacement procedure:

(1) Remove the spring from the Pinch Arm Lock Lever which is hooked to the T Soft Brake.

(2) Remove the polyslider washer and remove the T Soft Brake from the unit.

(3) Install the T Soft Brake to the unit so that the projection of the new T Soft Brake is positioned to the * marked portion of the Brade Slider Assembly, insert the 1.2mm diameter polyslider washer onto the shaft, and fasten the T Soft Brake.

(4) Hook the spring of the Pinch Arm Lock Lever to the T Soft Brake.


polyslider washer
pinch arm lock lever
T soft brake
projection
*
brake slider ass'y

4-19. REPLACEMENT OF THE TAKE-UP SIDE SUB SOFT BRAKE

Mode: EJECT

Replacement procedure:

(1) Remove the spring from the Pinch Arm Lock Lever which is hooked to the T Soft Brake.

(2) Remove the spring from the Cassette Detection Pin which is hooked to the Pinch Arm Lock Lever.

(3) Remove the polyslider washer fixing the Pinch Arm Lock Lever and remove the Lock Lever from the unit.

(4) Remove the spring from the T Sub Soft Brake which is hooked on hole C of the Pinch Arm Lock Lever.

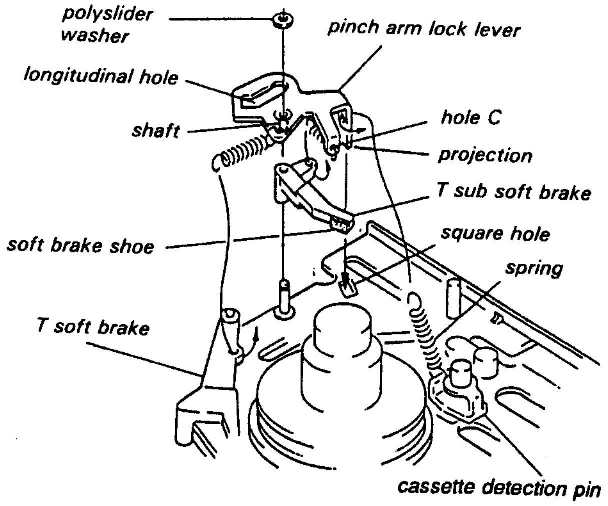
(5) Remove the spring from the T Sub Soft Brake and hook it on the new T Sub Soft Brake in the direction as shown in the figure.

(6) Insert the T Sub Soft Brake onto the shaft of the Pinch Arm Lock Lever and hook the spring as shown in the figure.

(7) Install the Pinch Arm Lock Lever on the unit so that the projection of the Pinch Arm Lock Lever is inserted into the Square hole of the reel chassis, the T Sub Soft Brake Shoe touches the reel table, and the Pinch Arm Roller is inserted into the longitudinal hole of the Lock Lever.

(8) Insert the 1.2mm diameter polyslider washer onto the shaft and fasten the Lock Lever.

(9) Hook the spring which is removed in Steps (1) and (2).


polyslider washer
pinch arm lock lever
longitudinal hole
shaft
hole C
projection
T sub soft brake
soft brake shoe
square hole
spring
T soft brake
cassette detection pin

4-20. REPLACEMENT OF THE SUPPLY SIDE SOFT BRAKE

Mode: EJECT

Replacement procedure:

(1) Remove the polyslider washer (shown in the figure) fixing the Tension Regulator Band.

(2) Remove the polyslider washer at the top of the S Reel Table.

(3) Remove the S Reel Table from the unit while releasing the pressure against the S Reel Table of the S Soft Brake.

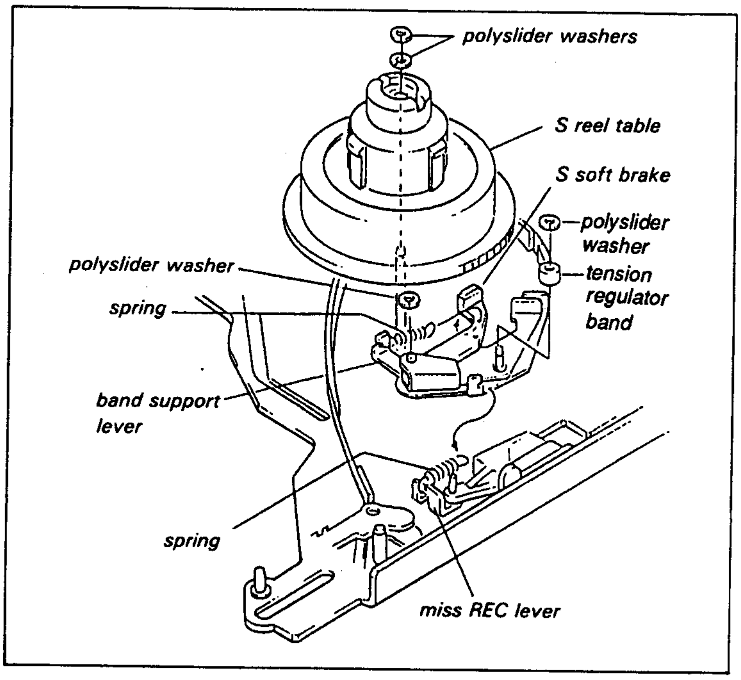
(4) Remove the spring from the Miss REC Lever B hooked on the Band Support Lever.

(5) Remove the polyslider washer shown in the figure and remove the Band Support Lever from the unit.

(6) Remove the spring from the S Soft Brake.

(7) Install the new S Soft Brake and hook the spring removed in Step 4 in the direction as shown in the figure.

(8) Assemble the S Soft Brake by reversing the Steps (1) through (5).


polyslider washers
S reel table
S soft brake
polyslider washer
tension regulator band
polyslider washer
spring
band support lever
spring
miss REC lever

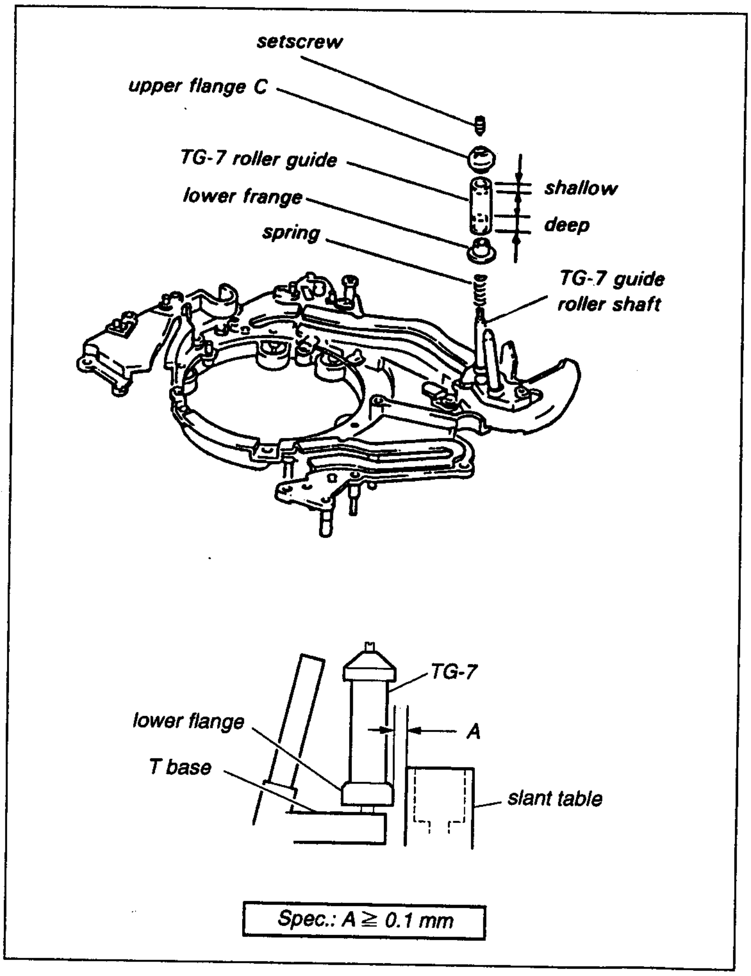
4-21. REPLACEMENT OF THE COMPONENT PARTS OF TAKE-UP SIDE BASE

- Replacement of the TG-7 (guide roller) on the T Base differs from replacement of the other components.
- Refer to Section 4-21-1 for replacement the TG-7, and refer to Section 4-21-2 for other components.

4-21-1.Replacement of the TG-7

Tool: Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Loosen the setscrew at the top of the TG-7 with the tape guide adjustment screwdriver.
(2) Remove the Upper Flange C.
(3) Remove the TG-7 Roller Guide TG-7, the Lower flange, and the compression spring.
(4) Clean the TG-7 Guide Roller Shaft with a cleaning piece moistened with cleaning fluid.
(5) Insert the compression spring removed in Step (3) onto the TG-7 Guide Roller Shaft.
(6) Carefully insert the Lower Flange and TG-7 Guide Roller onto the TG-7 Guide Roller Shaft in the direction as shown in the figure.
(7) Install the Upper Flange C.
(8) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.
(9) Check the clearance A between the lower flange of the TG-7 and the slant table so that it is more than 0.1 mm.
(10) After replacement, perform the adjustments in Section 4-42.


setscrew
upper flange C
TG-7 roller guide
lower frange
spring
shallow
deep
TG-7 guide roller shaft
TG-7
A
lower flange
T base
slant table
Spec.: A ≧ 0.1 mm

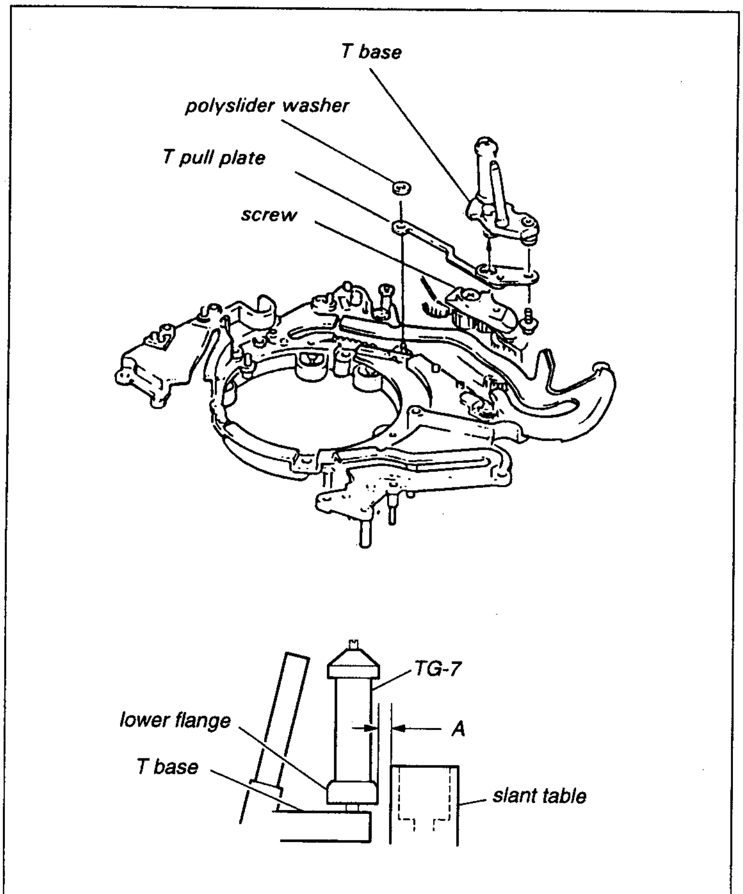
4-21-2. Replacement of the Component Parts of the Take-up Side Base

- For replacement of the TG-7 on the T Side Base, refer to Section 4-21-1.
- When replacing the components other than TG-7 on the T Side Base, remove the Drum from the unit once so as not to damage it.

Mode: Turn the screw shown in the figure so that the Take-up Side Base reaches the end of the Take-up Side Rail (I).

Replacement procedure:

(1) Remove the Drum Assembly from the unit. (Refer to Section 4-6.)
(2) Turn the screw and set the Take-up Side Base in the position described above.
(3) Remove the Take-up Side Rail(I). (Refer to Section 4-43.)
(4) Remove the polyslider washer fixing the Take-up Side Pull Plate and remove the Take-up Side Base from the unit.
(5) Replace the faulty component which constitutes the Take-up Side Base.
(6) Assemble the Take-up Side Base by reversing the Steps (1) through (4).
(7) Check the clearance A between the lower flange of the TG-7 and the slant table so that it is more than 0.1 mm.
(8) After replacement, perform the adjustments in Section 4-42.



Spec.: A ≧ 0.1 mm

4-22. REPLACEMENT OF THE COMPONENT PARTS OF THE SUPPLY SIDE BASE

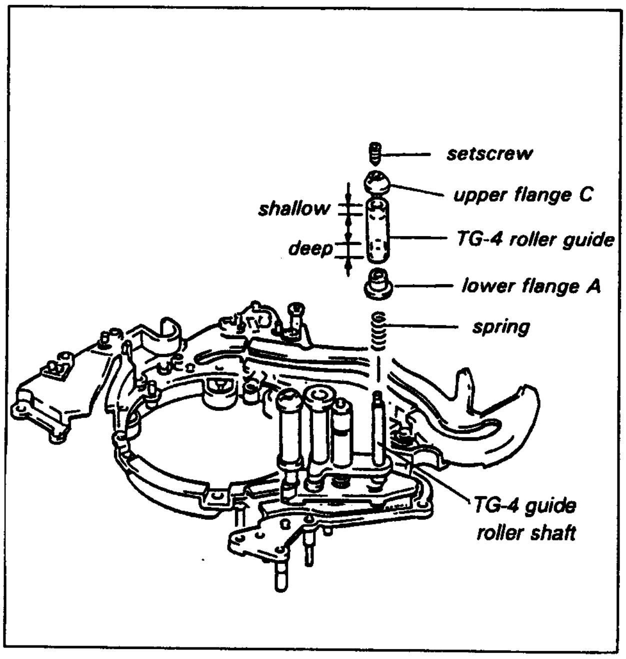
- Replacement of the S Sub Base,TG-4, TG-5, and IR-2 (impedance roller guide) on the S Base differs from replacement of the other components.
- Refer to Section 4-22-1 for TG-4, Section 4-22-2 for TG-5, Section 4-22-3 for IR-2, Section 4-22-4 for S Sub Base, and Section 4-22-5 for replacing the other components.

4-22-1.Replacement of the TG-4

Tool: Tape guide adjustment screwdriver
Mode: EJECT

Replacement procedure:

(1) Without loosening the setscrew at the top of the TG-4, remove the Upper Flange C by rotating it in the counterclockwise direction with a tape guide adjustment screwdriver.
(2) Remove the TG-4 Roller Guide, Lower Flange A, and the compression spring.
(3) Clean the TG-4 Guide Roller Shaft with the cleaning piece moistened with cleaning fluid.
(4) Insert the compression spring removed in Step (2) onto the TG-4 Guide Roller Shaft.
(5) Carefully insert the Lower Flange A and TG-4 Roller Guide onto the TG-4 Guide Roller Shaft in the direction as shown in the figure.
(6) Install the Upper Flange C. Tighten the Upper Flange C by rotating it in the clockwise direction with a tape guide adjustment screwdriver. Be sure not to tighten the Upper Flange C with setscrew.
(7) After replacement, perform the adjustments in Section 4-42.

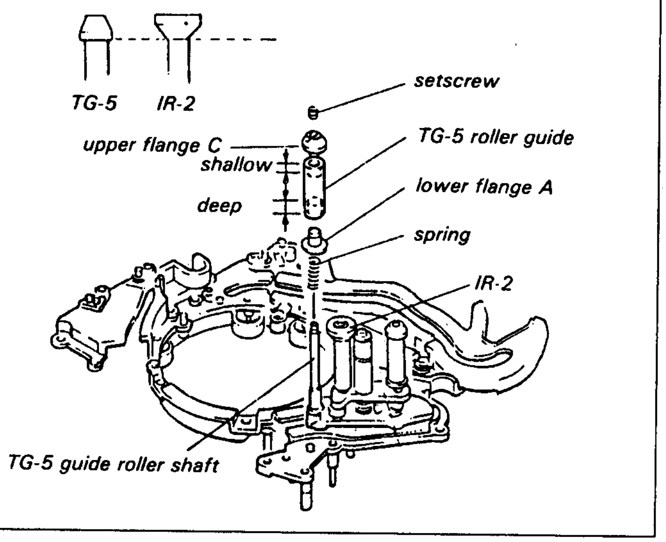


* When replacing the S Sub Base (section 4-22-1), perform the same procedure of TG-4.

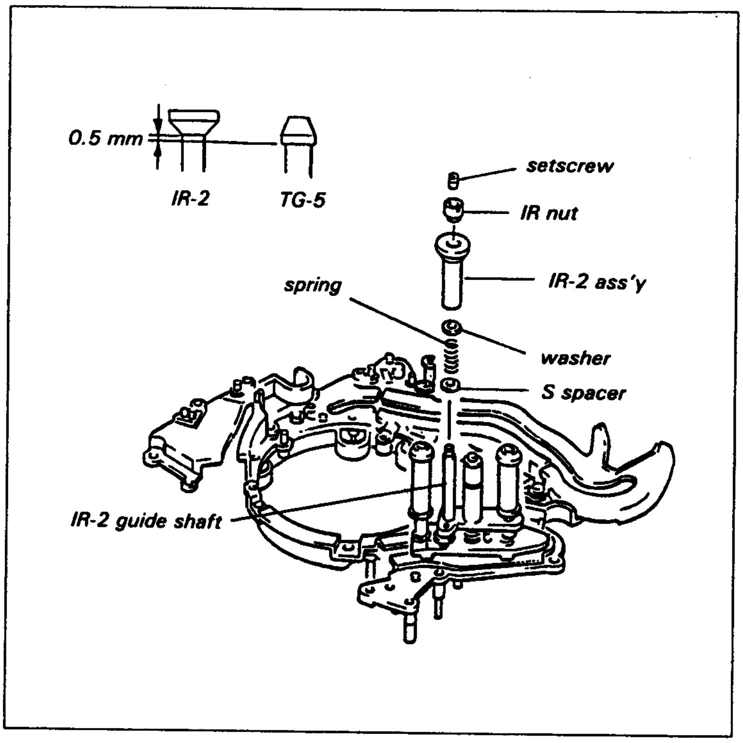
4-22-2. Replacement of the TG-5

Tool: Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Loosen the setscrew at the top of TG-5 with the tape guide adjustment screwdriver.
(2) Remove the Upper Flange C.
(3) Remove the TG-5 Roller Guide, Lower Flange A, and the compression spring.
(4) Clean the TG-5 Guide Roller Shaft with a cleaning piece moistened with cleaning fluid.
(5) Insert the compression spring removed in Step (3) onto the TG-5 Guide Roller Shaft.
(6) Carefully insert Lower Flange A and the TG-5 Roller Guide onto the TG-5 Guide Roller Shaft in the direction as shown in the figure.
(7) Install the Upper Flange C, and adjust the position of the TG-5 Guide Roller so that the lower end of the Upper Flange is the same in height as the lower end of the IR-2 Guide Upper Flange as viewed.
(8) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.
(9) After replacement, perform the adjustments in Section 4-42.


TG-5
IR-2
setscrew
upper flange C
TG-5 roller guide
shallow
lower flange A
deep
spring
IR-2
TG-5 guide roller shaft

4-22-3. Replacement of the IR-2 Guide (Impedance Roller Guide)



Tool: Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

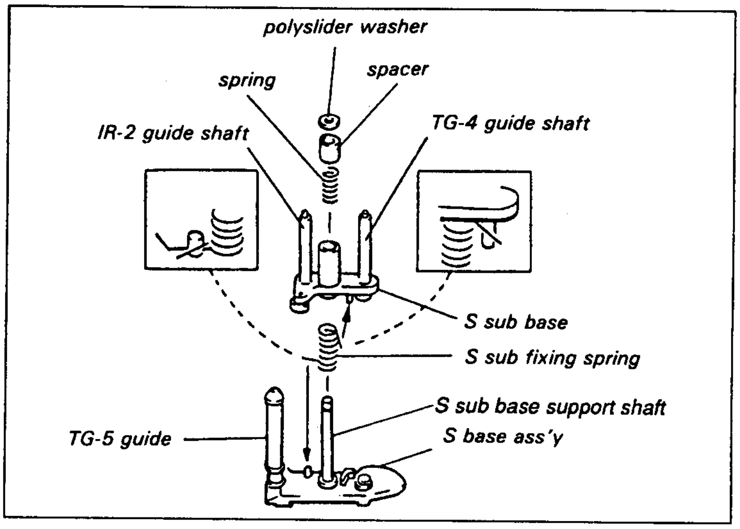
(1) Loosen the setscrew at the top of the IR-2 Guide with the tape guide adjustment screwdriver.
(2) Remove the IR Nut.
(3) Remove the IR-2 Assembly, washer (1.4mm dia.), compression spring, and S Spacer from the IR-2 Guide Shaft.
(4) Clean the IR-2 Guide Shaft with a cleaning piece moistened with cleaning fluid.
(5) Install the S Spacer, compression spring, and washer (1.4mm dia.) removed in Step (3) onto the IR-2 Guide Shaft.
(6) Carefully insert the new IR-2 Assembly onto the IR-2 Guide Shaft.
(7) Install the IR Nut, and adjust the position of the IR-2 Guide so that the lower end of the IR-2 Guide Upper Flange is about 0.5mm higher than the lower end of the TG-5 Guide Upper Flange.
(8) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.
(9) After replacement, perform the adjustments in Section 4-42.

4-22-4. Replacement of the Supply Side Sub Base

- The TG-4 and IR-2 Guides are provided on the S Sub Base. When replacing the S Sub Base, replace the TG-4 and IR-2 Guides referring to Sections 4-22-1 and 4-22-3. Then, adjust the height with the TG-5 Guide as reference.

Tool: Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Remove the polyslider washer at the top of the S Sub Base.
(2) Remove the spacer, compression spring, S Sub Base on which TG-4 and IR-2 Guide are installed, and S Sub Fixing Spring.
(3) Clean the new S Sub Base TG-4 Guide Shaft and IR-2 Guide Shaft with a cleaning piece moistened with cleaning fluid.
(4) Remove the TG-4 Guide Roller and IR-2 Impedance Roller from the S Sub Base removed in Step (2) and install them on the new S Sub Base.
(5) Clean the S Sub Base Support Shaft with a cleaning piece moistened with cleaning fluid.
(6) Insert the S Sub Fixing Spring, S Sub Base (assembled in Step (4)), compression spring, and spacer onto the S Sub Base Support Shaft.
(7) Hook the S Sub Fixing Spring as shown in the figure.
(8) Insert the polyslider washer (1.5mm dia.) onto the top of the S Sub Base Shaft and fasten the S Sub Base.
(9) Adjust the height of the TG-4 and IR-2 Guides with the TG-5 Guide as reference. (Refer to Sections 4-22-1 and 4-22-3).
(10) After replacement, perform the adjustments in Section 4-42.



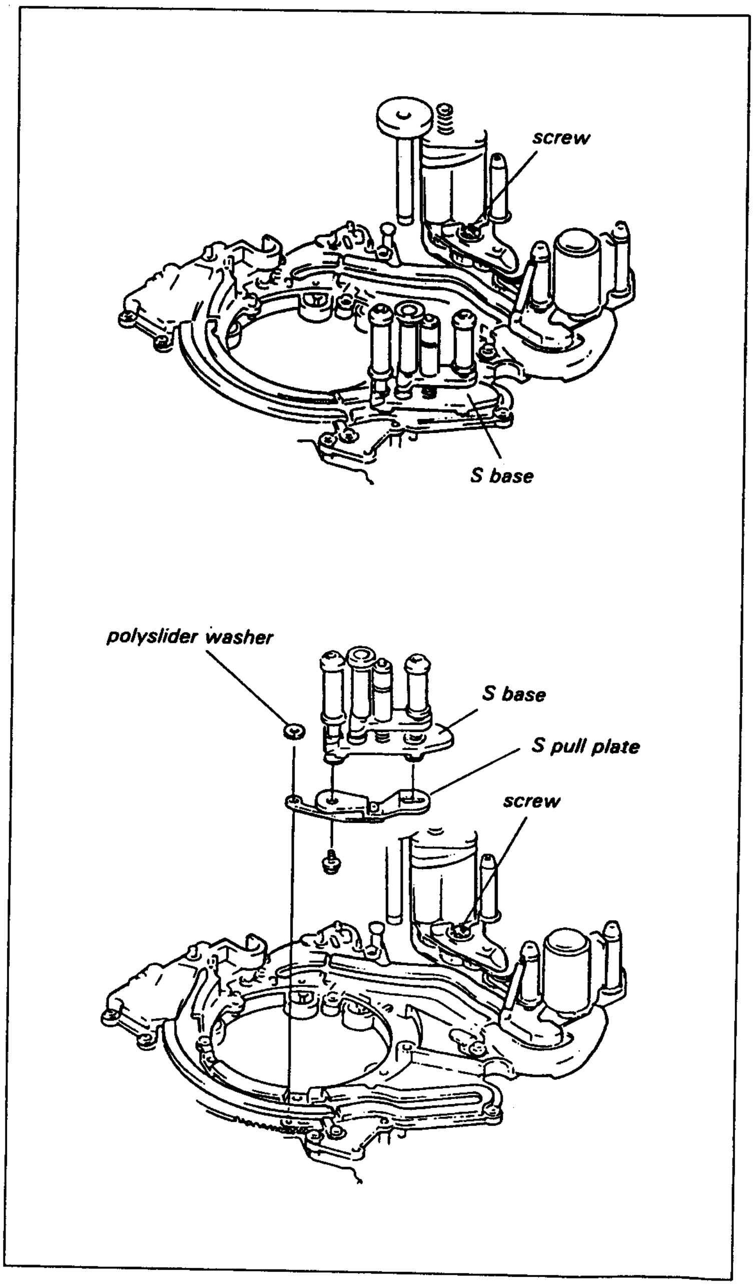
4-22-5. Replacement of the Component Parts of the Supply Side Base

- Refer to the appropriate section for replacing the TG-4, TG-5, and IR-2 Guides on the S Base.
- When replacing the components other than the above components on the S Base, remove the Drum Assembly from the unit so as not to damage it.

Mode: Turn the screw shown in the figure so that the S Side base reaches the end of the S Side rail.

Replacement procedure:

(1) Remove the Drum Assembly from the unit. (Refer to Section 4-6).
(2) Turn the screw and set the S Side Base in the position described above.
(3) Remove the S Side Rail (I). (Refer to Section 4-32).
(4) Remove the polyslider washer fixing the Supply Side Pull Plate and remove the S Side Base from the unit.
(5) Replace the faulty component which constitutes the S Side base.
(6) Assemble the S Side Base by reversing the Steps (1) through (4).
(7) After replacement, perform the adjustments in Section 4-42.



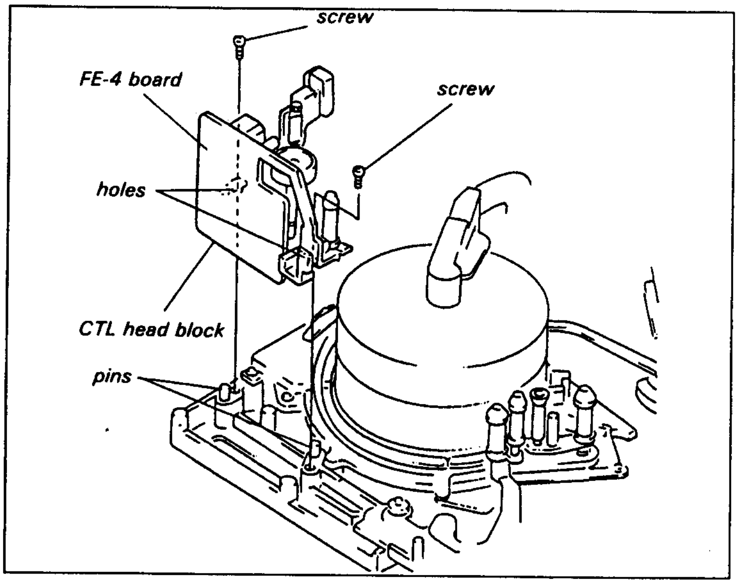
4-23. REPLACEMENT OF THE CTL HEAD BLOCK

- The CTL Head Block consists of the CTL Head, Erase Head, FE-4 Board, IR-1 Guide (impedance roller guide), and tape guide. Replacement of the above components is described below.
- When replacing the CTL Head, Erase Head, and FE-4 Board, remove the CTL Head Block from the unit. The removal and installation are described below.

Mode: EJECT

Removal and Installation:

- Remove the two fixing screws of the CTL Head Block and remove the CTL Head Block from the unit. When removing, raise the CTL Head Block connector CN43 at the lower portion of the FE-4 Board which is connected into the mother board (MB-317/317P Board).
- Install the CTL Head Block on the chassis with the two screws so that the two pins of the chassis are inserted into the CTL Head Block holes.

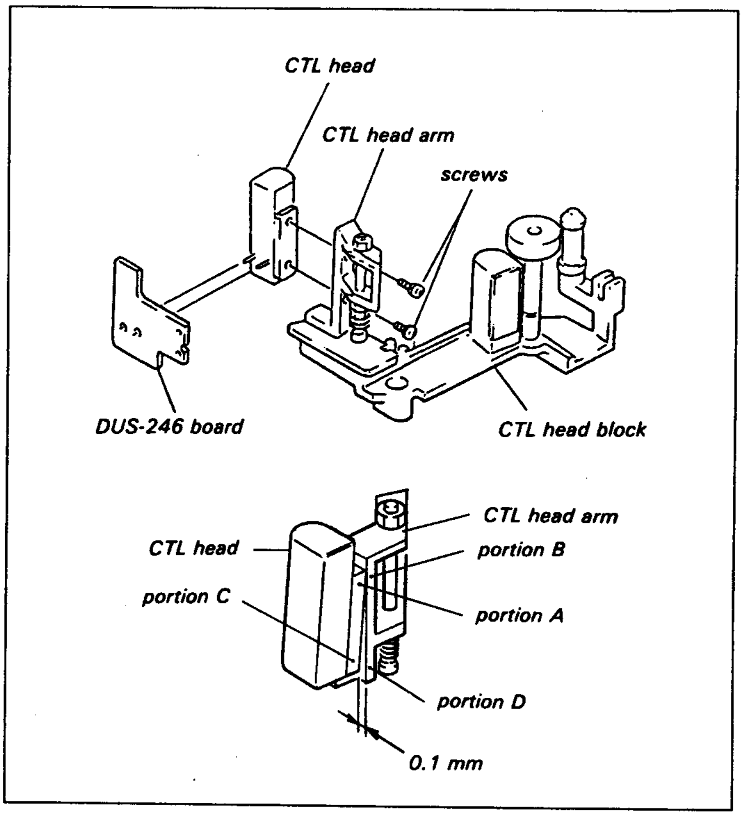


4-23-1. Replacement of the CTL Head

Mode: EJECT

Replacement procedure:

(1) Remove the CTL Head Block from the unit.
(2) Unsolder the DUS-246 Board which is mounted onto the CTL Head.
(3) Remove the two screws of the CTL Head Arm and remove the CTL Head.
(4) Install the new CTL Head to the CTL Head Arm with two screws snugly but do not tighten.
(5) Adjust the CTL Head position so that the surface of the CTL Head Bracket's upper end (portion A in the figure) is the same plane as that of the CTL Head Arm's upper end (portion B), and the CTL Head Bracket's lower end (portion C) is shifted by 0.1 mm with respect to CTL Head Arm's lower end (portion D) as shown in the figure. Then, tighten the two fixing screws.
(Tightening torque: 0.3 ± 0.05N•m{3 ± 0.5kg•cm}
(6) Solder the DUS-246 Board removed in Step (2).
(7) Install the CTL Head Block on the unit.
(8) After replacement, perform the adjustments in Section 4-42.

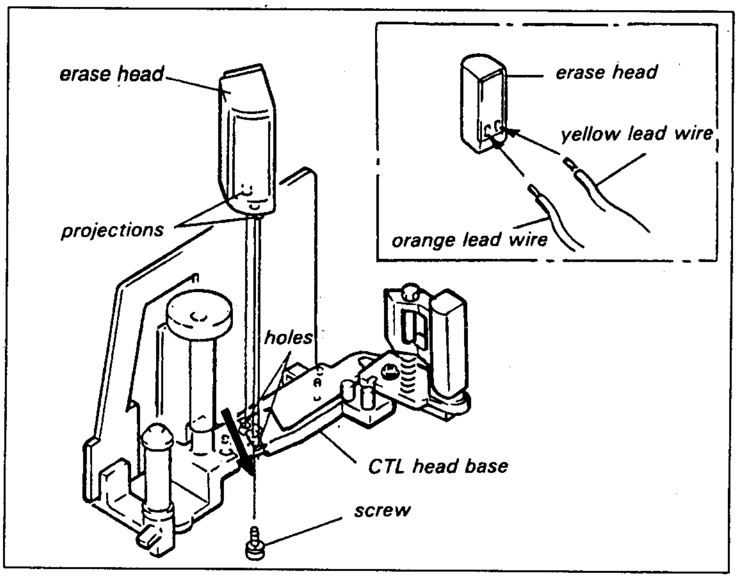

CTL head
CTL head arm
screws
DUS-246 board
CTL head block
CTL head arm
CTL head
portion B
portion C
portion A
portion D
0.1 mm

4-23-2. Replacement of the Erase Head

Mode: EJECT

Replacement procedure:

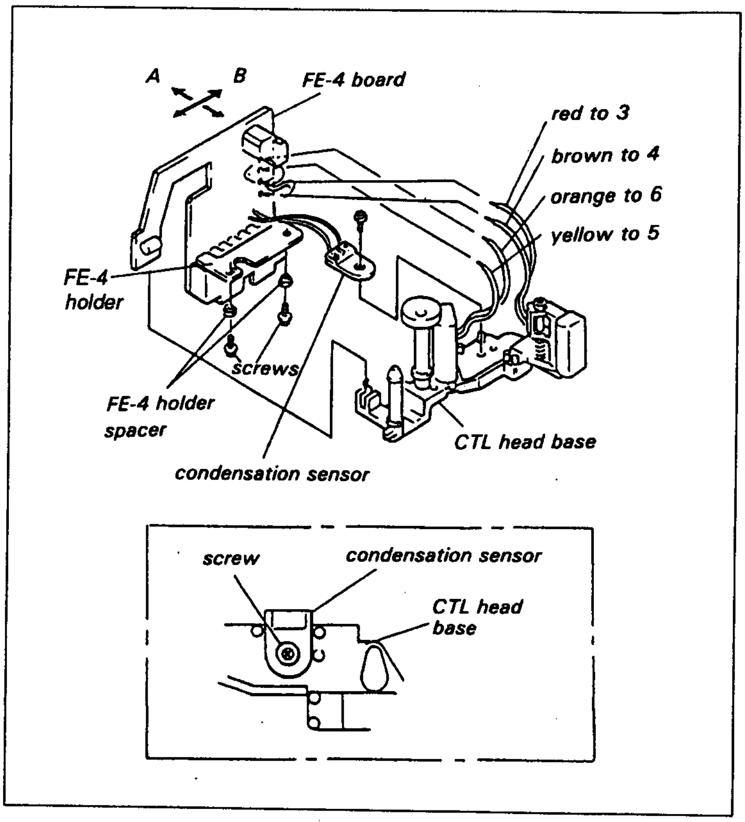
(1) Remove the CTL Head Block from the unit.
(2) Remove a screw from the lower side of the CTL Head Block and remove the Erase Head.
(3) Unsolder the two lead wires of the Erase Head.
(4) Solder two lead wires onto the new Erase Head. (When viewed from the back of the head, the yellow lead wire is located on the right, and the orange on the left.)
(5) Insert the two projections at the lower portion of the head into the holes of the CTL Head Base, and tighten the fixing screw while pushing it in the direction of the arrow.
(6) Install the CTL Head Block on the unit.
(7) After replacement, perform the adjustment in Section 4-42.


erase head
projections
holes
CTL head base
screw
erase head
yellow lead wire
orange lead wire

4-23-3.Replacement of the FE-4 Board

Mode: EJECT.
Replacement procedure:

(1) Remove the CTL Head Block from the unit.
(2) Remove the condensation sensor which is attached to the CTL Head Base.
(3) Remove the two screws from the lower side of the CTL Head Block and remove the FE-4 Board. The FE-4 Holder Spacerers are inserted between the FE-4 Holder and screw. Be sure no to lose them.
(4) Unsolder the four lead wires on the FE-4 Board.
(5) Solder the lead wire removed in Step (4) onto the new FE-4 Board. (The brown lead wire is to 4,the red to 3, the orange to 6, and the yellow to 5.)
(6) Install the Condensation sensor removed in Step (2) in the position shown in the figure.
(7) Pass the FE-4 Holder Spacer through the screw in the direction as shown in the figure and install the FE-4 Board on the CTL Head Base.
(8) Check that the FE-4 Board is slightly shifted in the direction of the arrows A and B.
(9) Install the CTL Head Block on the unit.
(10) After replacement, perform the adjustment in Section 4-42.


A
B
FE-4 board
red to 3
brown to 4
orange to 6
yellow to 5
FE-4 holder
screws
FE-4 holder spacer
CTL head base
condensation sensor
screw
condensation sensor
CTL head base

4-23-4. Replacement of the IR-1 Guide (Impedance Roller Guide)

Tool: Thickness gauge
Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Measure the clearance between the lower surface of the IR-1 Guide's Upper Flange and Erase Head with the thickness gauge. (The clearance should be memorized.)

(2) Loosen the setscrew at the top of the IR-1 Guide with the tape guide adjustment screwdriver.

(3) Remove the IR Nut.

(4) Remove the IR-1 Assembly,washer(1.4mm dia.),and compression spring from the IR-1 Guide Shaft.

(5) Clean the IR-1 Guide Shaft with a cleaning piece moistened with cleaning fluid.

(6) Install the compression spring and washer(1.4mm dia.) remove in Step (4) onto the IR-1 Guide Shaft.

(7) Carefully insert the new IR-1 Assembly onto the IR-1 Guide Shaft.

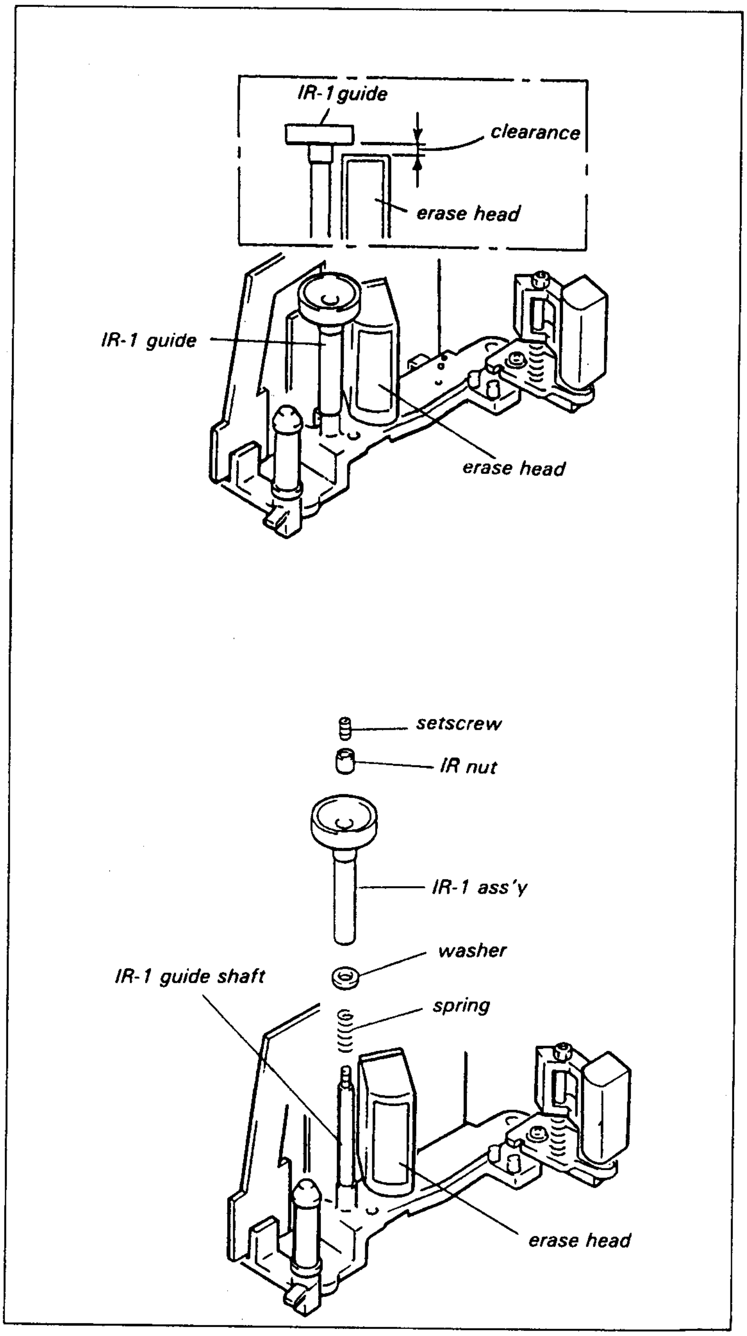
(8) Install the IR Nut.

(9) Adjust the height of the IR-1 Guide using the IR Nut so that the clearance between the lower surface of the IR-1 Guide's Upper Flange and the Erase Head is the same as the clearance measured in Step (1).

(10) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.

(11) Recheck the clearance between the lower surface of the IR-1 Guide's Upper Flange and the Erase Head. When the clearance does not meet the required specification, repeat Steps (9) and (10).

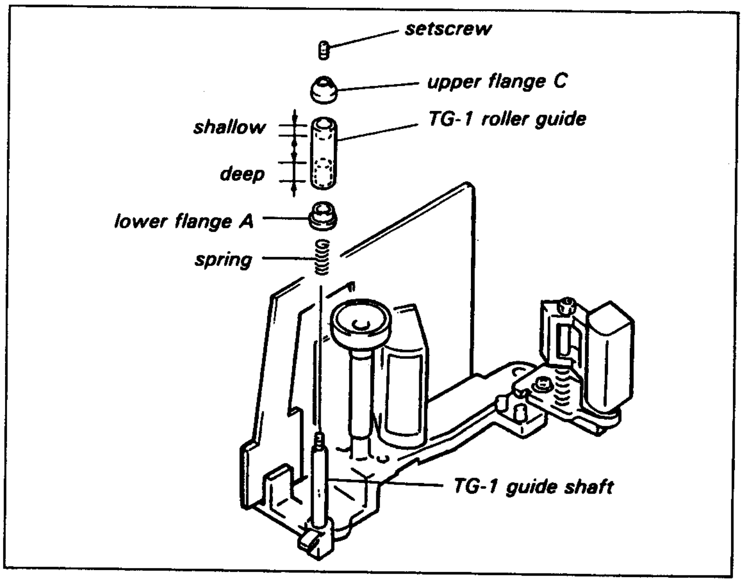
(12) After replacement, perform the adjustment in Section 4-42.



4-24. REPLACEMENT OF THE TG-1

Tool: Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Loosen the setscrew at the top of the TG-1 with the tape guide adjustment screwdriver.
(2) Remove the Upper Flange C.
(3) Remove the TG-1 Roller Guide, Lower Flange A, and the compression spring.
(4) Clean the TG-1 Guide Shaft with a cleaning piece moistened with cleaning fluid.
(5) Insert the compression spring removed in Step (3) onto the TG-1 Guide Shaft.
(6) Carefully insert the Lower Flange A and the TG-1 Roller Guide onto the TG-1 Guide Shaft in the direction as shown in the figure.
(7) Install the Upper Flange C.
(8) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.
(9) After replacement, perform the adjustment in Section 4-42.


setscrew
upper flange C
shallow
TG-1 roller guide
deep
lower flange A
spring
TG-1 guide shaft

4-25. REPLACEMENT OF THE A/T HEAD

- When replacing the A/T Head, be careful not to loosen or tighten the azimuth adjustment screw and zenith adjustment screw shown in the figure.

Tool: Plate parallel
Thickness gauge
Tweezers
Flatness check tool

Mode: EJECT

Replacement procedure:

(1) Remove the flexible board (FL-55 Board) of the A/T Head Block which is connected to connectors CN3 and CN7 on the TB-5 Board with the tweezers. (Refer to Section 3-9).

(2) Remove the three fixing c screws of the A/T Head Block and remove the A/T Head Block from the unit. Be careful not to damage the flexible board (FL-55 Board).

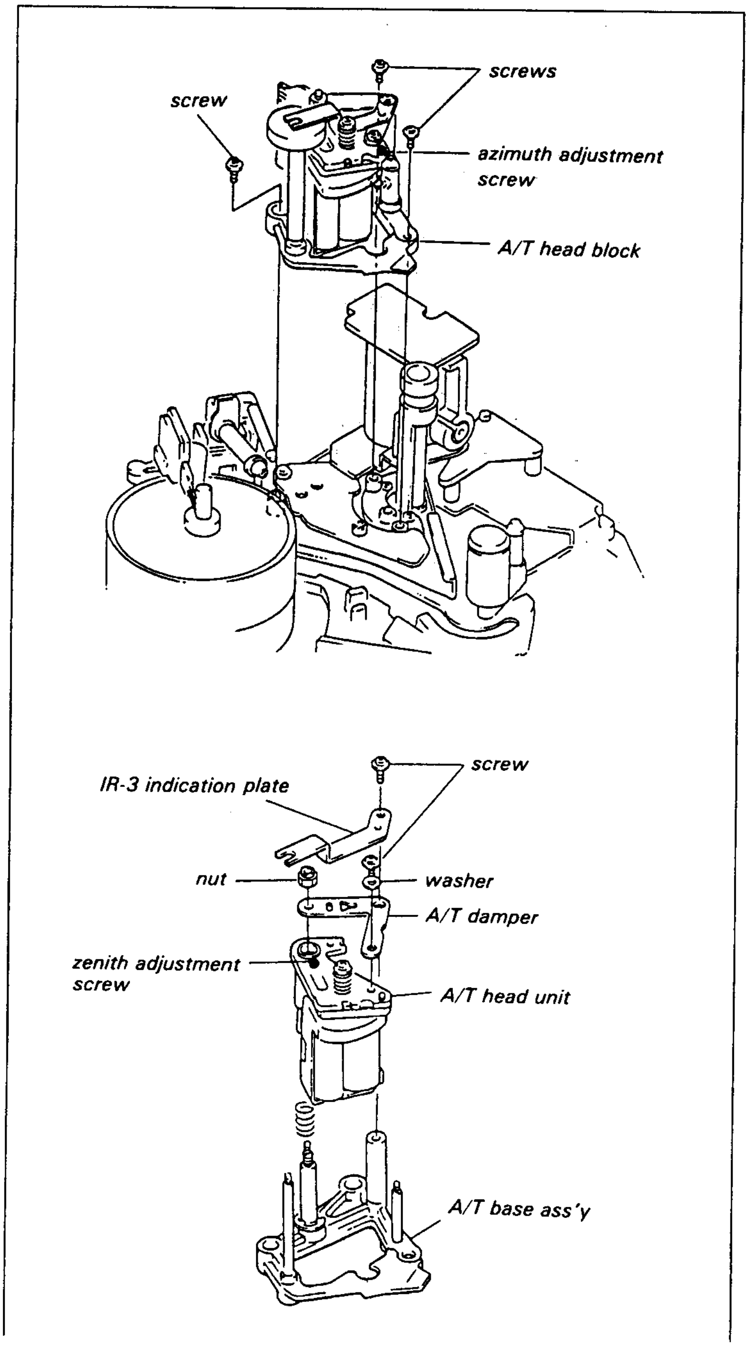
(3) Unsolder the ten terminals the FL-55 Board which is soldered to the A/T Head and remove the FL-55 Board from the A/T Head Block.

(4) Remove the two screws and one nut shown in the figure, then remove the A/T Head Unit from the A/T Head Block.

(5) Remove the screw located in the center of the A/T Head Unit and remove the A/T Head Unit Sub Assembly from the A/T Plate (Upper) Assembly.

(6) As shown in the figure, put the flatness plate on the flatness check tool and place the A/T Head Unit Sub Assembly (removed in Step (5)) on it.

(7) Check the clearance between the flatness check tool and the edge of the A/T Plate (Lower) with the thickness guage.


screws
screw
azimuth adjustment screw
A/T head block
screw
IR-3 indication plate
nut
washer
A/T damper
zenith adjustment screw
A/T head unit
A/T base ass'y

(8) Remove the two screws shown in the figure, remove the A/T Head and A/T Shield Case from the A/T Plate (Lower), and replace the new A/T Head. Thread the two screws on the head snugly but do not tighten.

(9) Put the A/T Head Unit Sub Assembly on the flatness check tool as in Step (6) and insert the thickness gauge checked in Step (7) between the A/T Plate (Lower) and flatness check tool.

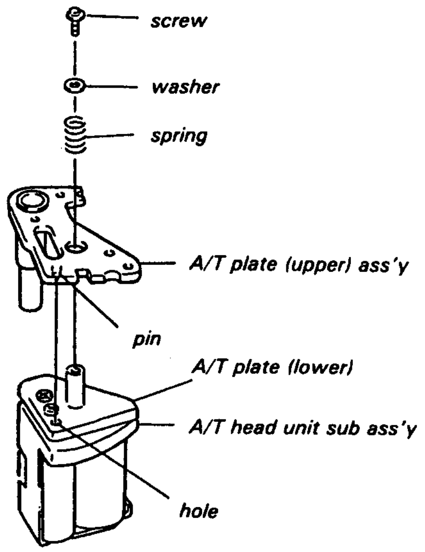
(10) Tighten the two A/T Head fixing screws while pushing the A/T Head and A/T Plate (Lower) toward the flatness check tool.
(NOTE) Be careful not to damage the head.

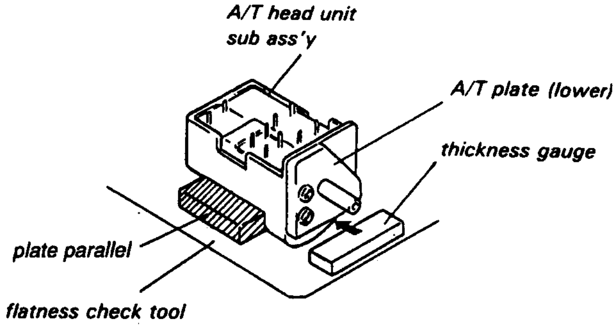
(11) Install the A/T Head Unit Sub Assembly on the A/T Plate (Upper) Assembly by reversing the Step (5). Check that the pin of the A/T Plate (Upper) Assembly is inserted into the hole of the A/T Plate (Lower).

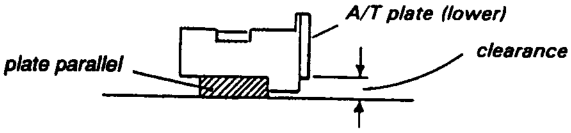
(12) Install the A/T Head Unit on the A/T Base Assembly. As shown in the figure, adjust the nut so that clearance A (See next page) between the tip of the A/T Auxiliary Shaft and A/T Plate (Upper) Assembly meets the required specification as viewed.

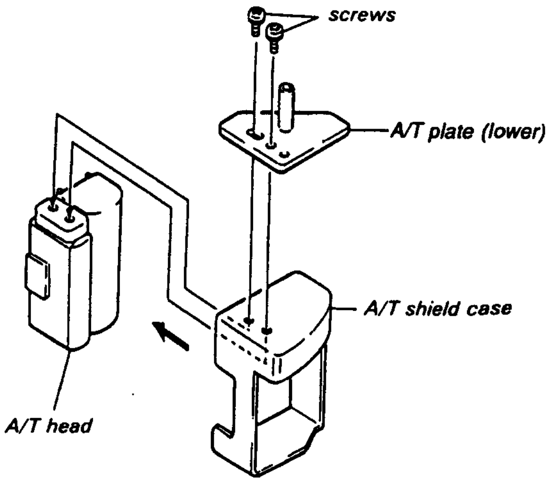
(13) Assemble the A/T Head Block in the unit by reversing the Steps (1) through (3).

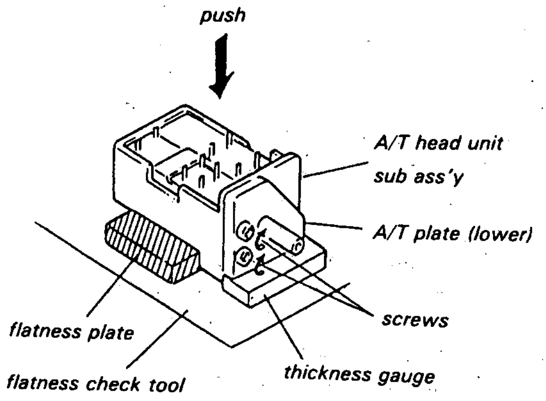
(14) After replacement, perform the adjustment in Section 4-42.

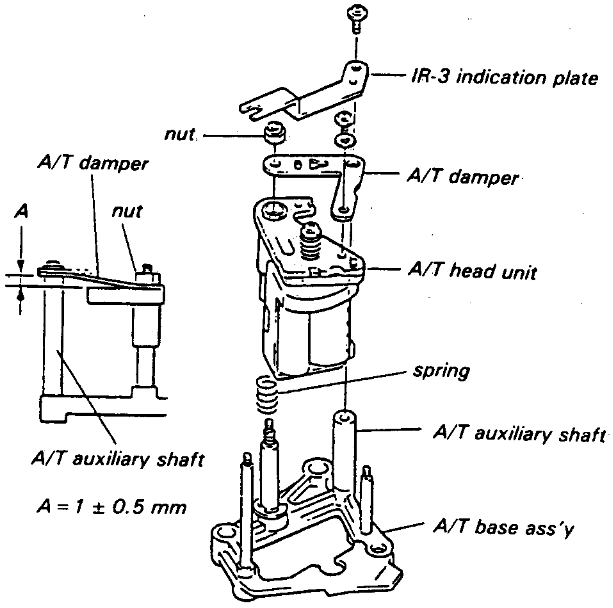

screw
washer
spring
A/T plate (upper) ass'y
pin
A/T plate (lower)
A/T head unit sub ass'y
hole


A/T head unit sub ass'y
A/T plate (lower)
thickness gauge
plate parallel
flatness check tool

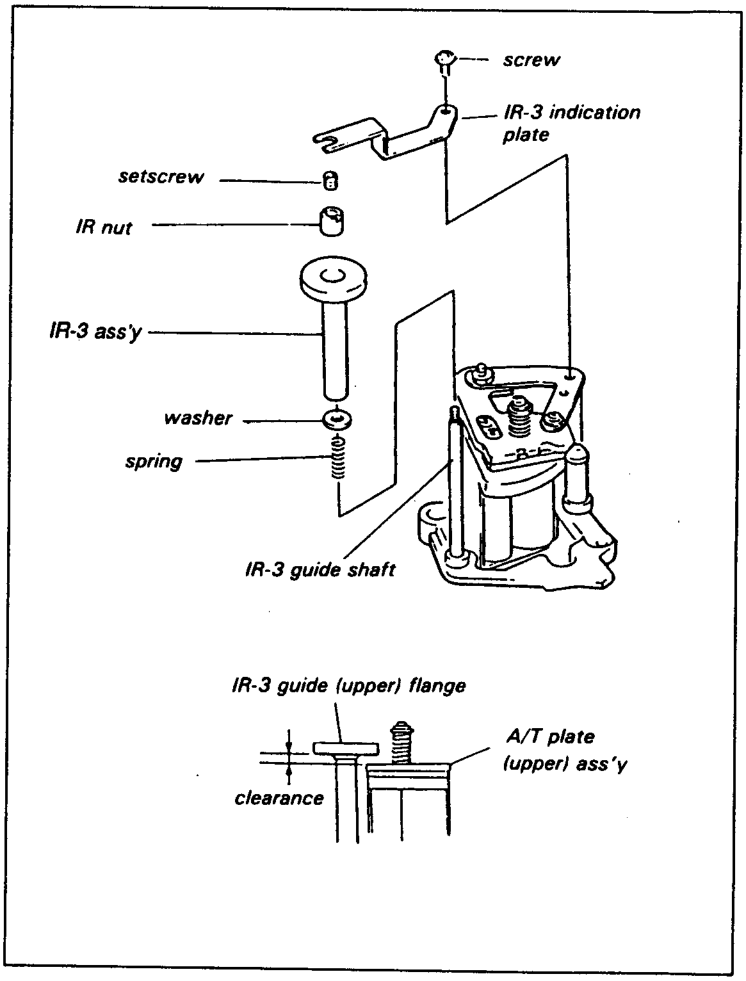

A/T plate (lower)
clearance
plate parallel


screws
A/T plate (lower)
A/T shield case
A/T head


push
A/T head unit sub ass'y
A/T plate (lower)
screws
flatness plate
flatness check tool
thickness gauge


IR-3 indication plate
nut
A/T damper
A
nut
A/T damper
A/T head unit
spring
A/T auxiliary shaft
A/T auxiliary shaft
A/T base ass'y
A = 1 ± 0.5 mm

4-26. REPLACEMENT OF THE IR-3 GUIDE (IMPEDANCE ROLLER GUIDE)



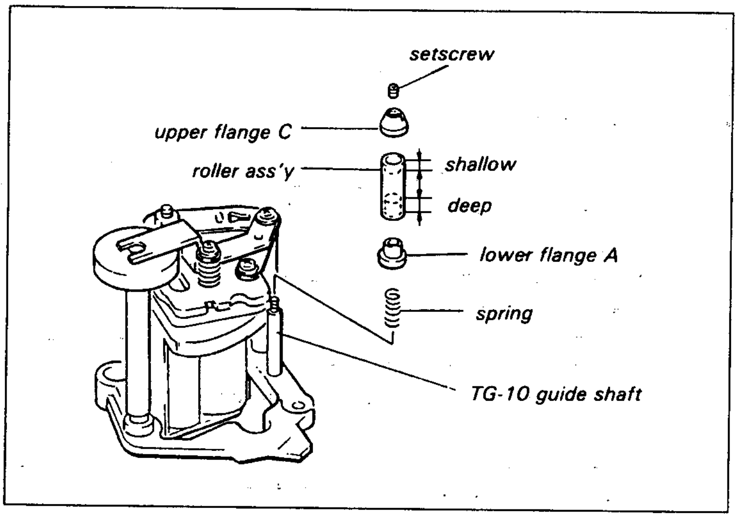
Tool: Thickness gauge
Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Measure the clearance between the lower surface of an IR-3 Guide's Upper Flange and the A/T Plate (Upper) Assembly with the thickness gauge.
(The clearance should be memorized.)
(2) Remove the screw and remove the IR-3 Supporting Plate.
(3) Loosen the setscrew at the top of the IR-3 Guide with the tape guide adjustment screwdriver.
(4) Remove the IR nut.
(5) Remove an IR-3 Assembly, washer (1.4mm dia.), and compression spring from the IR-3 Guide Shaft.
(6) Clean the IR-3 Guide Shaft with a cleaning piece moistened with cleaning fluid.
(7) Install the compression spring and washer (1.4mm dia.) removed in Step (5) onto the IR-3 Guide Shaft.
(8) Carefully insert the new IR-3 Assembly onto the IR-3 Guide Shaft.
(9) Install the IR Nut.
(10) Adjust the height of the IR-3 Guide using the IR Nut so that the clearance between the lower surface of the IR-3 Guide's Upper Flange and the A/T Plate (Upper) Assembly is the same as the clearance measured in Step (1).
(11) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.
(12) Recheck the clearance between the lower surface of the IR-3 Guide's Upper Flange and the A/T Plate (Upper) Assembly. When the clearance dose not meet the required specification, repeat Steps (10) and (11).
(13) After replacement, perform the adjustments in Section 4-42.

4-27. REPLACEMENT OF THE TG-10

Tool: Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Loosen the setscrew at the top of the TG-10 with the tape guide adjustment screwdriver.
(2) Remove the Upper Flange C.
(3) Remove the Roller Assembly, Lower Flange A, and the compression spring.
(4) Clean the TG-10 Guide Shaft with a cleaning piece moistened with cleaning fluid.
(5) Insert the compression spring removed in Step (3) onto the TG-5 Guide Shaft.
(6) Carefully insert the Lower Flange A and the Roller Assembly onto TG-10 Guide Shaft in the direction shown in the figure.
(7) Install the Upper Flange C.
(8) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.
(9) After replacement, perform the adjustments in Section 4-42.



4-28. REPLACEMENT OF THE COMPONENT PARTS OF THE TAKE-UP SIDE SUB BASE

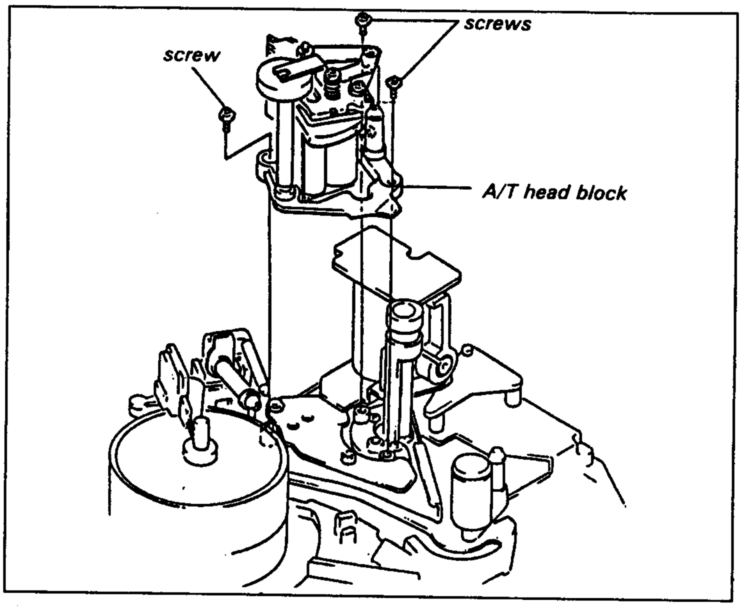
- The T Sub Base Block consists of the TG-8 and the Slant Guide. Replacement of the above componenets is described below.
- When replacing the above components, remove the A/T Head Block from the unit. The removal and installation procedures are described below.

Tool: Tweezers

Mode: EJECT

Removal and Installation Procedures:

- Remove the flexible board (FL-55 Board) of the A/T Head Block which is connected to connectors CN3 and CN7 on the TB-5 Board with the tweezers. (Refer to Section 3-9.)
- Remove the three fixing screws of the A/T Head Block and remove the A/T Head Block from the unit. Be careful not to damage the flexible board (FL-55 Board) and A/T Head.
- Install by reversing the above.
- When replacing the component of the T Sub Base, not to remove the frame of the T Sub Base (T Sub Rotation Table) and T Sub Adjustment Plate from the unit.



4-28-1. Replacement of the TG-8

- TG-8 is the component part of the T Sub Base Block.

Tool: L-shaped hexagonal wrench (across flat has 0.89mm.)
Tension gauge (50g full scale)

Mode: EJECT → Threading end→ EJECT

Replacement procedure:

(1) Turn the screw clockwise until each of the tape guides are at position of the threading end as shown in the figure. Keep turning clockwise until the T Main Brake is pressed against the T Reel.

(2) Remove the A/T Head Block from the unit.

(3) Loosen the setscrew at the top of the T Sub Base by turning two or three times with the L-shaped hexagonal wrench.

(4) Pull the T Sub Rotary Main Shaft Assembly to the A/T head side. Then the T Sub Base Guide Unit can be removed.

(5) Remove the polyslider washer from the top of the TG-8 Guide.

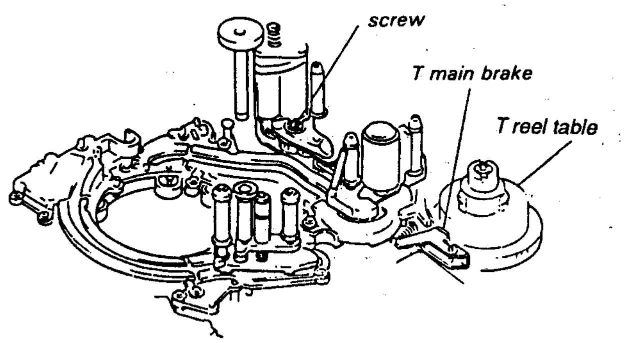
(6) Remove the compression spring, Roller Flange A, Roller Assembly (TG-8), and Roller Flange B from the TG-8 Guide Shaft.

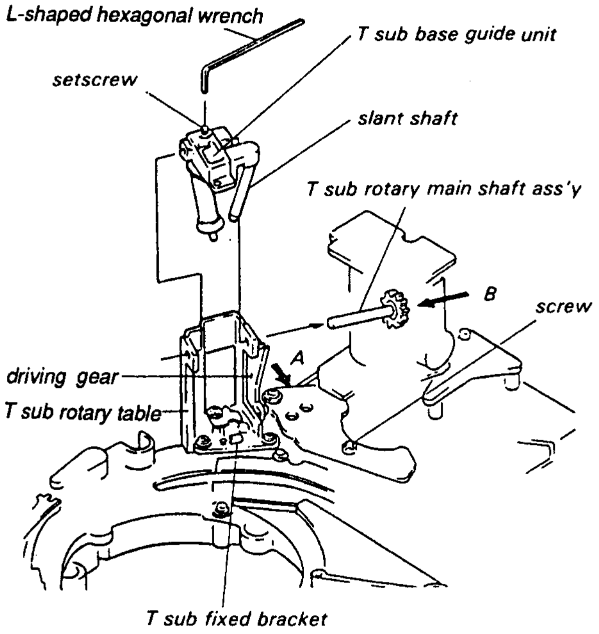
(7) Clean the TG-8 Guide Shaft with a cleaning piece moistened with cleaning fluid.

(8) Carefully insert the Roller Flange B, Roller Assembly (TG-8), and Roller Flange A onto the TG-8 Guide Shaft in the direction as shown in the figure.

(9) Insert the compression spring onto the TG-8 Guide Shaft, then push the 1.2mm diameter polyslider washer on the shaft.

(10) Install the assembled T Aub Base Guide Unit onto the T Sub Rotary Table with the T Sub Rotary Table with the T Sub Rotary Main Shaft assembly. (Do not tighten the setscrew too much.)


screw
T main brake
T reel table


L-shaped hexagonal wrench
T sub base guide unit
setscrew
slant shaft
T sub rotary main shaft ass'y
B
screw
A
driving gear
T sub rotary table
T sub fixed bracket

(11) Slowly turn the screws mentioned in Steps (1) counterclockwise until the T Sub Fixed Bracket touches the T Sub Rotary Table. (At that time, do not move the Driving Gear of the T Sub Rotary Table.)

(12) Push the top edge of the TG-8 Guide Shaft onto the T Sub Rotary Table side (the opposite side to the drum).

(13) Turn the screws clockwise until the T Main Brake is pressed against the T Reel Table as described in Step (1).

(14) While pushing the Driving Gear in the direction of the arrow A and T Sub Rotary Main Shaft Assembly in the direction of the arrow B, tighten the setscrew.

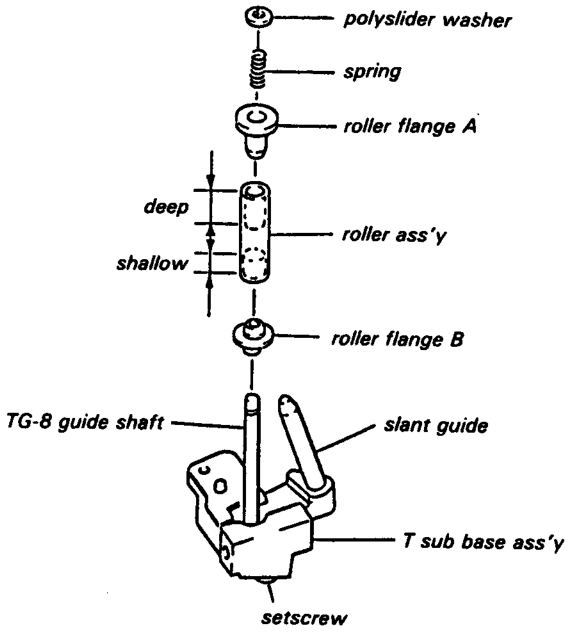
(15) Turn the screw described in Step (1) so that the top edge of the TG-8 is locked by the T Sub Fixed Bracket.

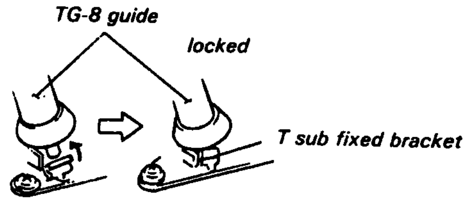
(16) Reform the small paper clip as shown in the figure.

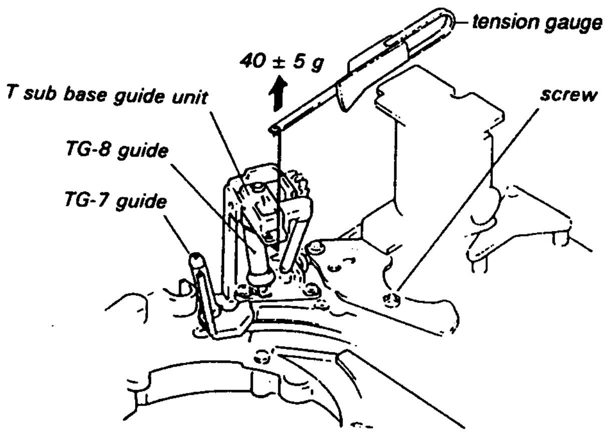
(17) Insert the reformed paper clip into the hole of the T Sub Base Guide Unit and hang the tension gauge on the other end.

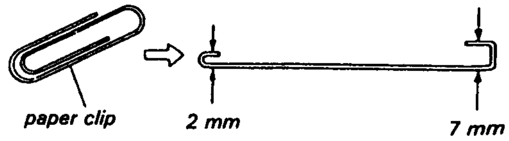
(18) Move the tension gauge in the upward direction to the unit until it shows 40 ± 5g. (Never applied 50g or more.)

(19) Turn the screw described in Step (1) clockwise, and check that the top edge of the TG-8 Guide is firmly locked by the T Sub Fixed Bracket. When threading or unthreading check that the TG-8 Guide Roller and the TG-7 Guide are not touching. If the specification is not satisfied, perform the Step (14) again. At that time, change the degree of pressure a little when pushing in the direction of arrow A.


polyslider washer
spring
roller flange A
deep
shallow
roller ass'y
roller flange B
TG-8 guide shaft
slant guide
T sub base ass'y
setscrew


TG-8 guide
locked
T sub fixed bracket


tension gauge
40 ± 5 g
T sub base guide unit
screw
TG-8 guide
TG-7 guide

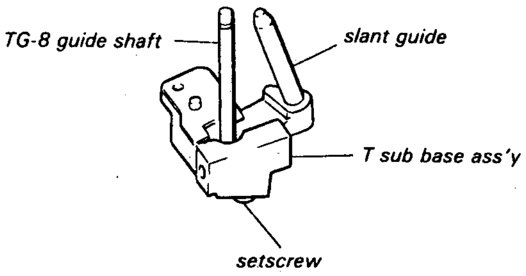

paper clip
2 mm
7 mm

4-28-2. Replacement of the Slant Guide

- The Slant Guide is the component part of the T Sub Base Block.

Tool: L-shaped hexagonal wrench (across flat has 0.89mm dia.)
Mode: EJECT → Threading end →EJECT
Replacement procedure:

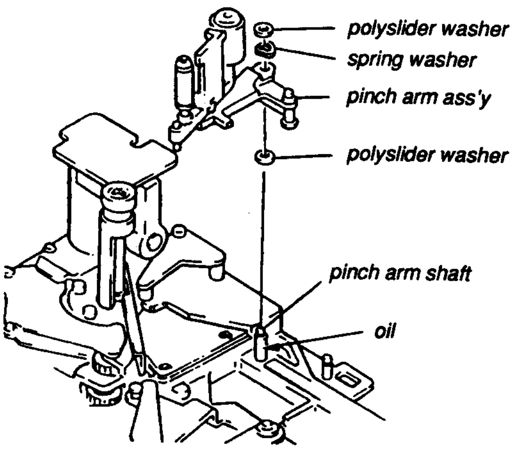
(1) The same as in Steps (1) through (6) of Section 4-28-1.
(2) Remove the setscrew from the removed T Sub Base Assembly and install it on the new T Sub Base Assembly.
(3) Clean the TG-8 Guide Shaft of the T Sub Base Assembly and Slant Guide with a cleaning piece moistened with cleaning fluid.
(4) Assemble as described in Steps (8) through (19) of Section 4-28-1.
(5) After replacement, perform the adjustments in Section 4-42.



4-29. REPLACEMENT OF THE PINCH ARM ASSEMBLY

Tool: Tweezers
Mode: EJECT
Replacement procedure:

(1) Remove the Pinch Arm Lock Lever from the unit. (Refer to Section 4-19.)
(2) Remove the polyslider washer fixing the Pinch Arm Assembly and remove the assembly from the unit.
(3) Clean the Pinch Arm Shaft with a cleaning piece moistened with cleaning fluid.
(4) Apply a 1/4 drop of Sony oil on the Pinch Arm Shaft.
(5) Install the new Pinch Arm Assembly.
(6) Insert the polyslider washer (1.2mm dia.) onto the shaft and fasten the Pinch Arm Assembly.
(7) Install the Pinch Arm Lock Lever. (Refer to Section 4-19.)
(8) After replacement, perform the adjustment in Section 4-42.


polyslider washer
spring washer
pinch arm ass'y
polyslider washer
pinch arm shaft
oil

4-30. REPLACEMENT OF THE PINCH ROLLER SUB ASSEMBLY

- The TG-11 Guide is installed on the shaft of the Pinch Roller sub Assembly.
- When replacing the Pinch Roller Sub Assembly, the TG-11 Guide must be replaced at the same time. (Refer to Section 4-31.)

Mode: EJECT

Replacement procedure:

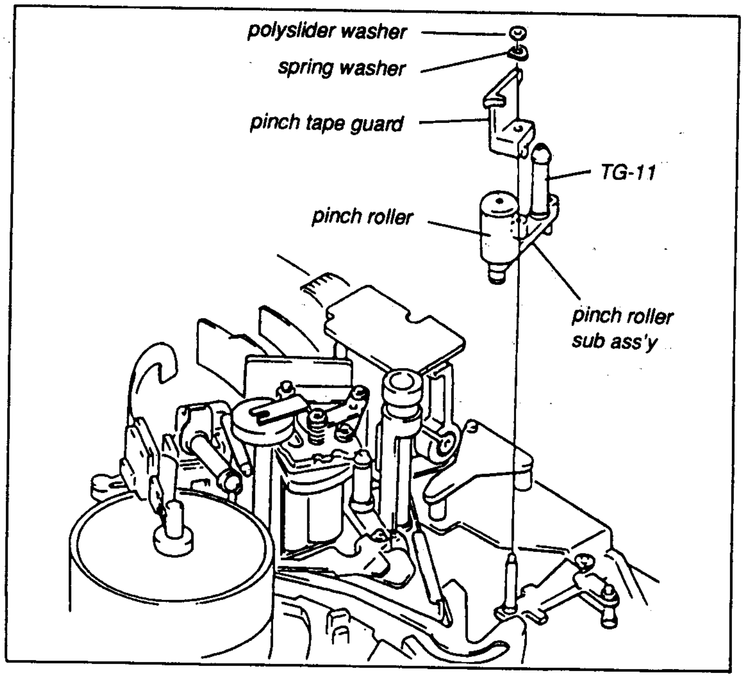
(1) Remove the polyslider washer fixing the Pinch Roller Sub Assembly onto the Pinch Arm Assembly.

(2) Remove the Pinch Tape Guard and the Pinch Roller Sub Assembly from the unit.

(3) Install the TG-11 Guide of the old Pinch Roller Sub Assembly onto the new Pinch Roller Sub Assembly as described in Section 4-31.

(4) After installing the Pinch Roller Sub Assembly and the Pinch Tape Guard on the Pinch Arm Assembly, push a polyslider washer onto the shaft.

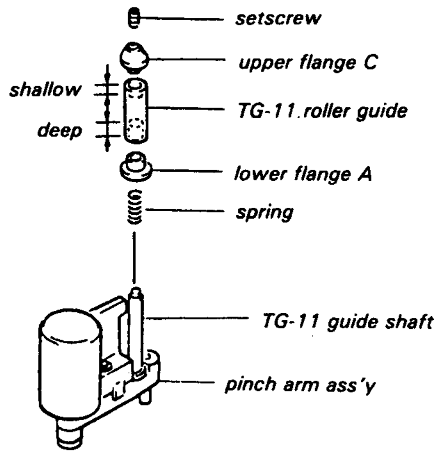
(5) Clean the pinch roller with a cleaning piece moistened with cleaning fluid.



4-31. REPLACEMENT OF THE TG-11

Tool: Tape guide adjustment screwdriver
Mode: EJECT
Replacement procedure:

(1) Loosen the setscrew at the top of the TG-11 with the tape guide adjustment screwdriver.
(2) Remove the Upper Flange C.
(3) Remove the TG-11 Roller Guide, Lower Flange A, and the compression spring.
(4) Clean the TG-11 Guide Shaft with a cleaning piece moistened with cleaning fluid.
(5) Insert the compression spring removed in Step (3) onto the TG-11 Shaft.
(6) Carefully insert the Lower Flange A and the TG-11 Roller Guide onto the TG-11 Guide Shaft in the direction as shown in the figure.
(7) Install the Lower Flange C.
(8) Tighten the setscrew at the top of the guide with the tape guide adjustment screwdriver.
(9) After replacement, perform the adjustment in Section 4-42.

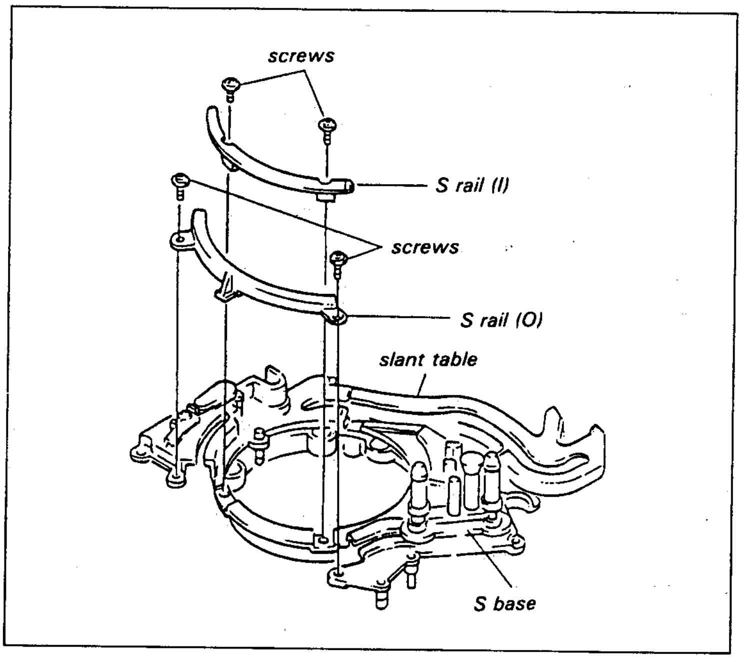

setscrew
upper flange C
shallow
deep
TG-11 roller guide
lower flange A
spring
TG-11 guide shaft
pinch arm ass'y

4-32. REPLACEMENT OF THE SUPPLY SIDE RAIL (I)

Mode: EJECT

Replacement procedure:

(1) Remove the Drum Assembly from the unit. (Refer to Section 4-6.)
(2) Remove the two screws on the S Rail (I) and remove it from the unit.
(3) Install the new S Rail (I) on the unit so that the clearance between the new S Rail (I) and S Rail (O) is 3.1 to 3.4mm.
(4) Repeat threading and unthreading two or three times and check that they can be done smoothly.
(5) Install the Drum Assembly on the unit.
(6) After replacement, perform the adjustments in Section 4-42.



4-33. REPLACEMENT OF THE SUPPLY SIDE RAIL (O)

Mode: EJECT

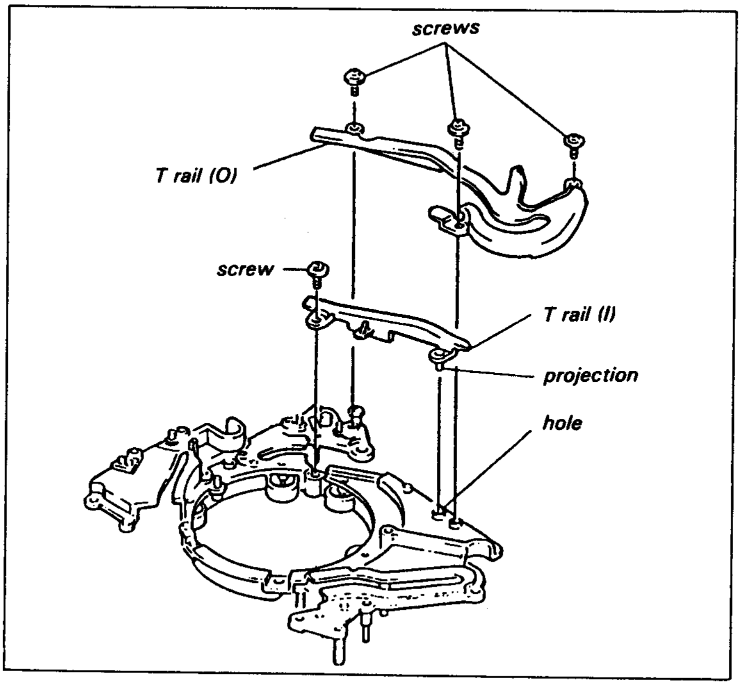
Replacement procedure:

(1) Remove the two screws of the S Rail (O) and remove it from the unit.
(2) Install a new S rail (O) on the unit so that the clearance between the new S Rail (O) and S Rail (I) is 3.1 to 3.4mm.
(3) Repeat threading and unthreading two or three times and check that they can be done smoothly.

4-34. REPLACEMENT OF THE TAKE-UP SIDE RAIL (I)

Mode: Threading end
Replacement procedure:

(1) Remove the Drum Assembly from the unit. (Refer to Section 4-6.)
(2) Remove a fixing screw on the T Rail (I) and remove it from the unit.
(3) Install the new T Rail (I) so that its projection is inserted into the chassis hole and the clearance between the new T Rail (I) and T Rail (O) is 3.1mm to 3.5mm.
(4) Repeat threading and unthreading two or three times and check that they can be done smoothly.
(5) Install the Drum Assembly on the unit.
(6) After replacement, perform the adjustments in Section 4-42.



4-35. REPLACEMENT OF THE TAKE-UP SIDE RAIL(O)

Mode: Threading end
Replacement procedure:

(1) Remove the three fixing screws of the T Rail (O) and remove it.
(2) Install the new T Rail (O) on the unit so that the clearance between the new T Rail (O) and T Rail (I) is 3.1 to 3.5mm.
(3) Repeat threading and unthreading two or three times and check that they can be done smoothly.

4-36. REPLACEMENT OF THE LOADING MOTOR

- When replacing the Loading Motor, replacement of the Loading Motor Assembly is recommended.

Mode: EJECT

Replacement procedure:

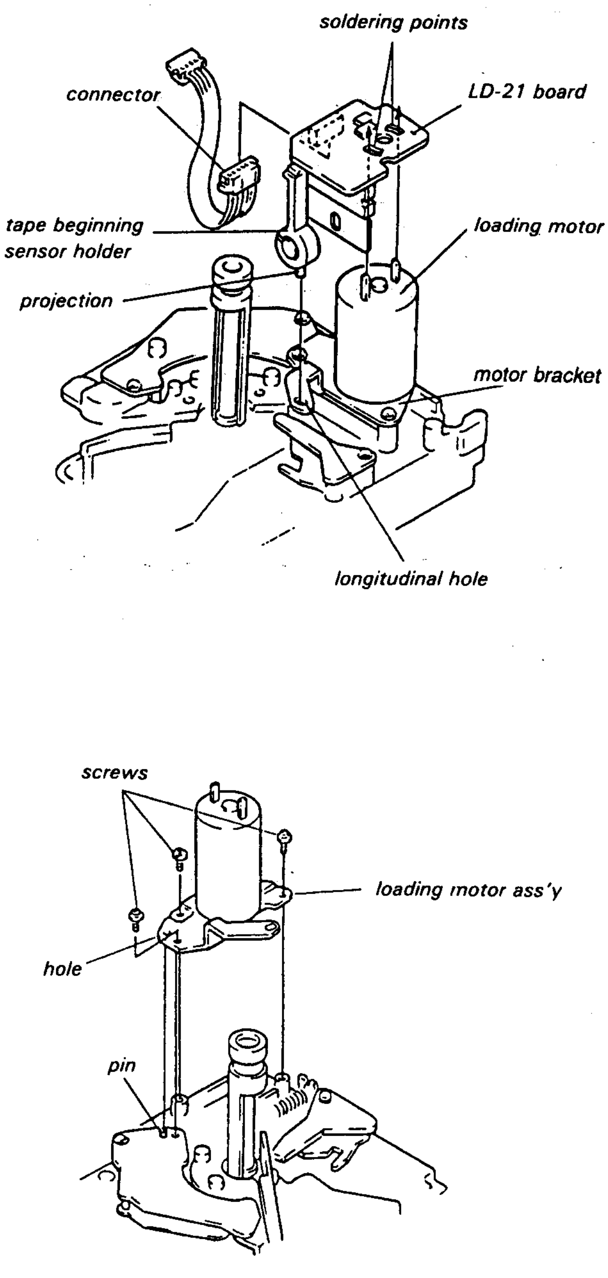
(1) Remove the connector on the LD-21 Board of the upper portion of the Loading Motor.

(2) Unsolder the two terminals, then remove the LD-21 Board from the Loading Motor.

(3) Remove the three screws shown in the figure, then remove the Loading Motor Assembly from the unit.

(4) After inserting the chassis pin into the hole of the new Loading Motor Assembly, install the Loading Motor Assembly, install the Loading Motor Assembly with the three fixing screws.

(5) Assemble by reversing the Steps (1) and (2). When installing, make sure that the projection at the lower part of the Tape Beginning Sensor Holder on the LD-21 Board is in the logitudinal hole of the Motor Bracket.

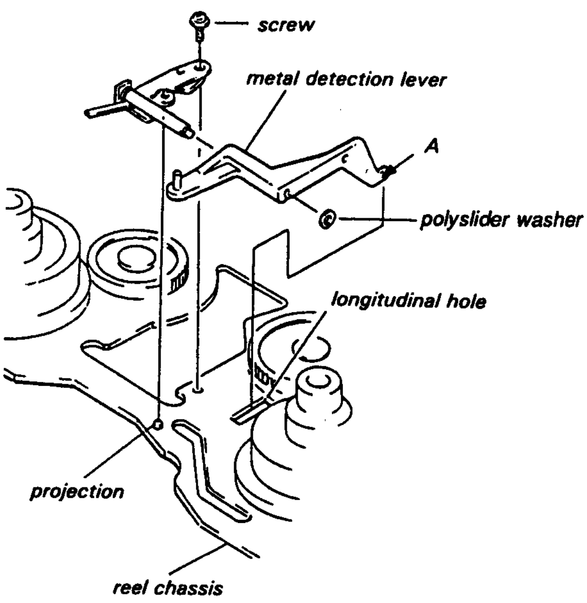

soldering points
connector
LD-21 board
tape beginning sensor holder
loading motor
projection
motor bracket
longitudinal hole
screws
loading motor ass'y
hole
pin

4-37. REPLACEMENT OF THE METAL DETECTION LEVER

Mode: EJECT

Replacement procedure:

(1) Remove the Brake Slider refering to Section 4-17.
(2) Remove a screw of the Metal Detection Lever and remove it from the unit.
(3) Remove the polyslider washer of the Metal Detection Lever and replace it with the new one.
(4) Install the Metal Detection Lever with the 1.2mm diameter polyslider washer.
(5) Install the Metal Detection Lever on the chassis and fix it with the fixing screw so that portion A of the Metal Detection Lever is inserted into the logitudinal hole and the projection of the reel chassis is inserted into the hole of the Metal Detection Lever.
(6) Install the Brake Slider refering to Section 4-17.

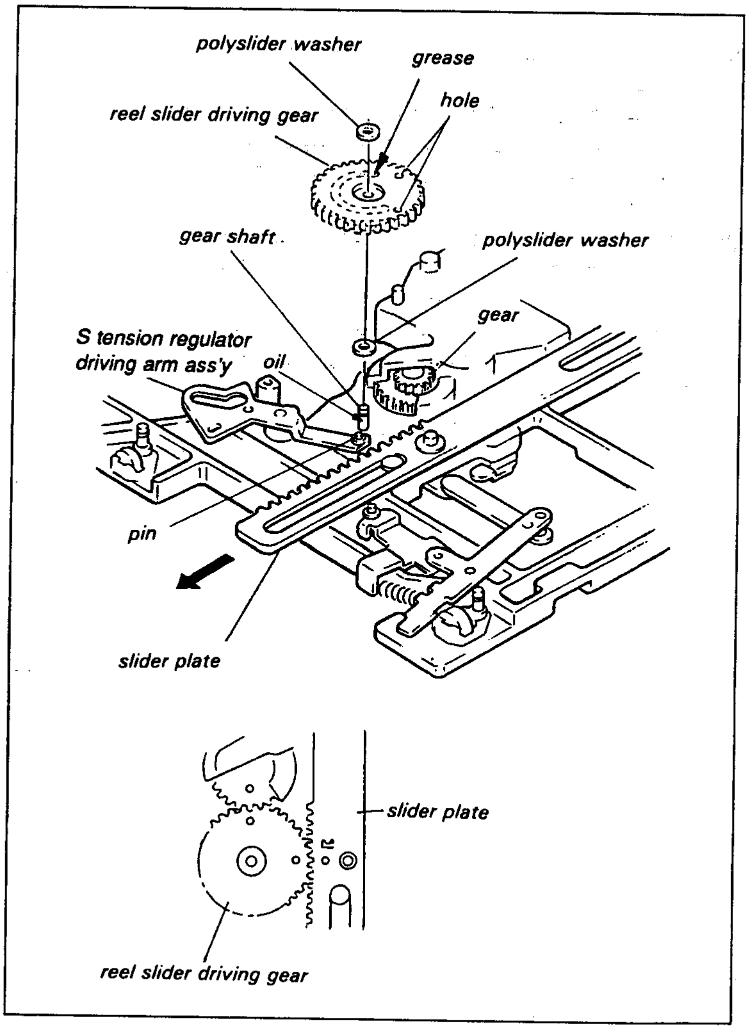

screw
metal detection lever
A
polyslider washer
longitudinal hole
projection
reel chassis

4-38. REPLACEMENT OF THE REEL SLIDER DRIVING GEAR

- When replacing this part, remove the Reel Chassis from the Mechanical Deck Block. (Refer to Section 3-16.)

Tool: Sony grease
Sony oil
Mode: EJECT
Replacement procedure:

(1) Remove the Reel Chassis. (Refer to Section 3-16.)
(2) Remove the polyslider washer fixing the Reel Slider Driving Gear, then remove the Reel Slider Driving Gear and the polyslider washer (1.6mm dia.).
(3) Clean the Gear Shaft with a cleaning piece moistened with cleaning fluid.
(4) Install the polyslider washer (1.6mm dia.) on the shaft.
(5) Apply a 1/4 drop of Sony oil on the shaft.
(6) Smear a little Sony grease onto the groove of the new Reel Slider Driving Gear.
(7) Move the Slider manually in the direction of the arrow until it stops.
(8) Insert the Reel Slider Driving Gear into the shaft so that the pin of the S Tension Regulator Driving Arm Assembly is into the groove of the Driving Gear, and so that the positional relationship between the holes on the other gear and the slider plate and two holes of the Driving Gear as shown in the figure.
(9) Push the polyslider washer (1.2mm dia.) onto the shaft and fasten the Reel Slider Driving Gear.
(10) Install the Reel Chassis. (Refer to section 3-16.)


polyslider washer
grease
hole
reel slider driving gear
gear shaft
polyslider washer
gear
S tension regulator driving arm ass'y
oil
pin
slider plate
slider plate
reel slider driving gear

4-39. REPLACEMENT OF THE TIMING BELT

When replacing this part, remove the Mechanical Deck Block from the unit. (Refer to Section 3-12.)

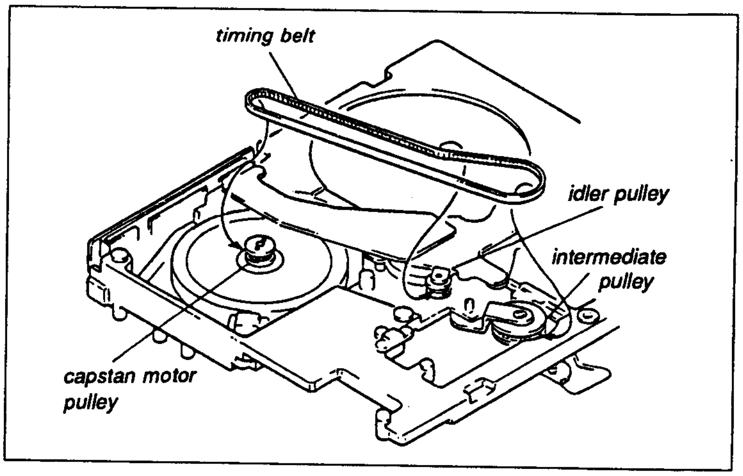
Mode: EJECT

Replacement procedure:

(1) Remove the Mechanical Deck Block from the unit.
(Refer to Section 3-12.)

(2) Remove the Timing Belt.

(3) Place the new Timimg Belt on the Capstan Motor Pulley, the Intermediate Pulley, then on the Idler Pulley in that order.



timing belt
idler pulley
intermediate pulley
capstan motor pulley

4-40. REPLACEMENT OF THE CAPSTAN MOTOR

- When replacing this part, remove the Mechanical Deck Block from the unit. (Refer to Section 3-12.)

Mode: EJECT

Replacement procedure:

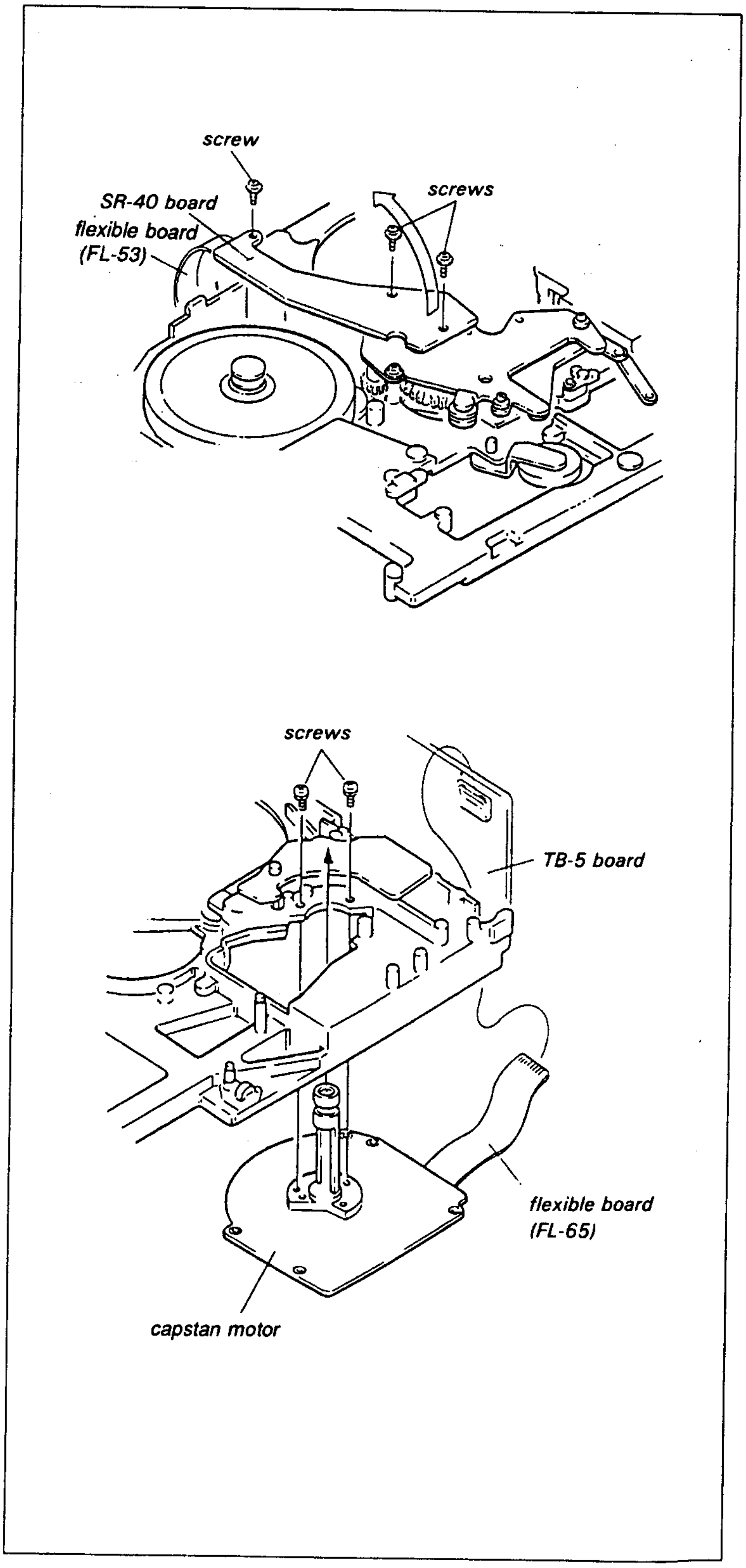
(1) Remove the Mechanical Deck Block from the unit.
(Refer to Section 3-12.)

(2) Remove the three fixing screws of the SR-40 Board on the back of the Mechanical Deck Block and open the SR-40 Board on the flexible board side.

(3) After removing flexible connector CN2 on the TB-5 Board from the front of the Mechanical Deck Block, remove the two fixing screws on the Capstan Motor, then remove the Capstan Motor from the unit.

(4) Install the new Capstan Motor on the Mechanical Deck Block by reversing the Steps (1) through (3).
(NOTE) It is recommended for easy installing that the tip of the flexible board (FL-65 Board) makes flat.

(5) Assemble by reversing the Step (2).


screw
SR-40 board
screws
flexible board
(FL-53)
screws
TB-5 board
flexible board
(FL-65)
capstan motor

4-41. REPLACEMENT OF THE GEAR BLOCK

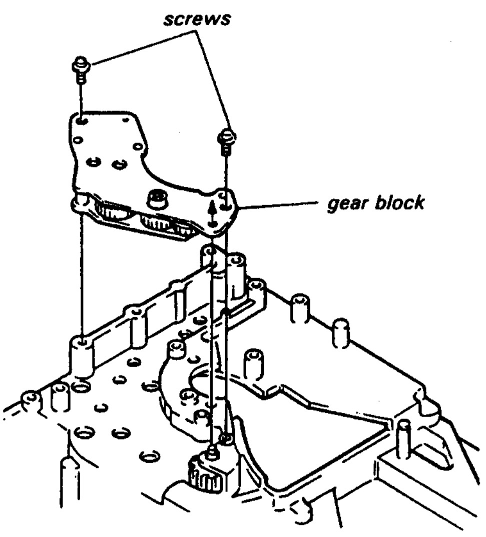
Mode: EJECT

Replacement procedure:

(1) Remove the Loading Motor as described in Section 4-36, and remove the A/T Head Block as in Section 4-25.

(2) Remove the two fixing screws as shown in the figure, remove the Gear Block, and replace with the new one.

(3) Install the A/T Head Block and the Loading Motor Block as described in Sections 4-25 and 4-36.



4-42. ITEMS TO BE ADJUSTED AFTER THE MAIN PARTS REPLACEMENT

(Numbers in parenthesis refer to Section Nos.)

Replacement of the Upper Drum Assembly
Brush Position Adjustment (6-16) → Tracking Adjustment (6-8) → Tape Path Adjustment (PLAY mode)(6-1) → Tape Path Check (FF,REW mode)(6-2) → CTL Head Height Adjustment (6-9) → CTL Head Position Adjustment (6-10) → TC Head Position Adjustment (6-12) → Audio Head Height Adjustment (6-13) → TC Head Position Adjustment (check)(6-12) → Audio Head Phase Adjustment (6-14) → PB Switching Position Adjustment (6-15) → Video System Adjustment (8-5)

Replacement of the Drum Assembly
Tracking Adjustment (6-8) → Tape Path Adjustment (PLAY mode)(6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (6-9) → CTL Head Position Adjustment (6-10) → TC Head Position Adjustment (6-12) → Audio Head Height Adjustment (6-13) → TC Head Position Adjustment (check)(6-12) → Audio Head Phase Adjustment (6-14) → PB Switching Position Adjustment (6-15) → Servo check (8-3) → Video System Adjustment (8-5)

Replacement of the S Reel Table
Tension Regulator Operating Position Adjustment (check)(5-8) → PLAY Back Tension Adjustment (check)(6-4)

Replacement of the Tension Regulator Band
Tension Regulator Operating Position Adjustment (5-8) → PLAY Back Tension Adjustment (6-4)

Replacement of the Tension Regulator
Tension regulator Operation Position Adjustment (5-8) → Tape Path Adjustment (PLAY mode)(6-1) → Tape Path Check (FF, REW mode)(6-2) → PLAY Back Tension Adjustment (6-4) → Tracking Adjustment (check)(6-8)

Replacement of the TG-7
Threading Position Check (Take-up side)(5-6) → Tape Threading/Unthreading Check (6-3) → Tape Path Adjustment (PLAY mode)(6-1) → Tape Path Check (FF, REW mode)(6-2) → Tracking Adjustment (check)(6-8)

Replacemet of the Component Parts of the T Base
Threading Position Check (Take-up side)(5-6) → Tape Threading/Unthreading Check (6-3) → Tape Path Adjustment (PLAY mode)(6-1) → Tape Path Check (FF, REW mode)(6-2) → Tracking Adjustment (6-8) → Tape Path adjustment (PLAY mode)(check)(6-1) → Tape Path check (FF, REW mode)(6-2) → CTL Head Height Adjustment (check)(6-9) → CTL Head Position Adjustment (check)(6-10) → TC Head Position Adjustment (6-12) → Audio Head Height Adjustment (6-13) → TC Head Position Adjustment (check)(6-12) → Audio Head Phase Adjustment (6-14) → PB Switching Position Adjustment (6-15)

Replacement of the TG-4
Threading Position Check (Supply side)(5-5) → Tape Threading/Unthreading Check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode) (check)(6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Asjustment (check)(6-9)

Replacement of the TG-5

Threading Position Check (Supply side)(5-5) → Tape Threading/Unthreading check (6-3) → Tracking Adjustment (6-8) → Tape Path Adjustment (PLAY mode)(check) (6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (check)(6-9)

Replacement of the IR-2

Threading Position Check (Supply side)(5-5) → Impedance Roller Guide II Clearance Adjustment (5-7) → Tape Threading/Unthreading Check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode)(check) (6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (check)(6-9)

Replacement of the S Sub base

Threading Position Check (Supply side)(5-5) → Impedance Roller Guide II Clearance Adjustment (5-7) → Tape Threading/Unthreading Check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode)(check) (6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (check)(6-9) → CTL Head Position Adjustment (check)(6-10) → TC Head Position Adjustment (check)(6-12)

Replacement of the Component Parts of the S Base

Threading Position Check (Supply side)(5-5) → Impedance Roller Guide 2 Clearance Adjustment (check)(5-7) → Tape Threading/Unthreading Check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path adjustment (PLAY mode)(check) (6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (6-9) → CTL Head Position Adjustment (6-10) → TC Head Position Adjustment (6-12) → Audio Head Height Adjustment (6-13) → TC Head Position Adjustment (check)(6-12) → Audio Head Phase Adjustment (6-14) → PB Switching Position Adjustment (6-15)

Replacement of the CTL Head

Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode)(check) (6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (6-9) → CTL Head Position Adjustment (6-10) → TC Head Position Adjustment (6-12)

Replacement of the Erase Head and the FE-4 Board

Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode)(check) (6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Position Adjustment (6-10) → TC Head Position Adjustment (6-12)

Replacement of the IR-1 Guide (Impedance Roller Guide), TG-1 Guide, IR-3 Guide, and the TG-10 Guide

Tape Path Adjustment (PLAY mode)(check)(6-1) → Tape Path Check (FF, REW mode) (6-2)

Replacement of the A/T Head

Audio Head Zenith Adjustment (6-11) → Tape Threading/Unthreading check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode)(check) (6-1) → Tape Path Check (FF, REW mode)(6-2) → Audio Head Height Adjustment (6-13) → Audio Head Phase Adjustment (6-14) → Audio System Adjustment (8-4)

Replacement of the TG-8 Guide and the Slant Guide

Tape Threading/Unthreading Check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path adjustment (PLAY mode)(check)(6-1) → Tape Path Check (FF, REW mode) (6-2) → Audio Head Height Adjustment (6-13) → Audio Head Phase Adjustment (6-14)

Replacement of the Pinch Arm Assembly and the Pinch Roller Sub assembly

Pinch Press Lever Position Adjustment (5-3) → Tape Threading/Unthreading Check (6-3) → Tape Path Check (Around the Pinch Roller)(6-5) → Tape Path Adjustment (PLAY mode)(6-1) → Tape Path Check (FF, REW mode)(6-2)

Replacement of the TG-11

Tape Threading/Unthreading Check (6-3) → Tape Path Check (Around the Pinch Roller)(6-5) → Tape Path Adjustment (PLAY mode)(6-1) → Tape Path check (FF, REW mode)(6-2)

Replacement of the S Rail (I)

Threading Position Check (Supply side)(5-5) → Tape Threading/Unthreading Check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode) (check)(6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (6-9) → CTL Head Position Adjustment (6-10) → TC Head Position Adjustment (6-12) → Audio Head Height Adjustment (6-13) → TC Head Position Adjustment (check)(6-12) → Audio Head Phase Adjustment (6-14) → PB Switching Position Adjustment (6-15)

Replacement of the T Rail (I)

Threading Position Check (Take-up side)(5-6) → Tape Threading/Unthreading Check (6-3) → Tracking Adjustment (check)(6-8) → Tape Path Adjustment (PLAY mode)(check)(6-1) → Tape Path Check (FF, REW mode)(6-2) → CTL Head Height Adjustment (6-9) → CTL Head Position Adjustment (6-10) → TC Head Position Adjustment (6-12) → Audio Head Height Adjustment (6-13) → TC Head Position Adjustment (check)(6-12) → Audio Head Phase Adjustment (6-14) → PB Switching Position Adjustment (6-15)

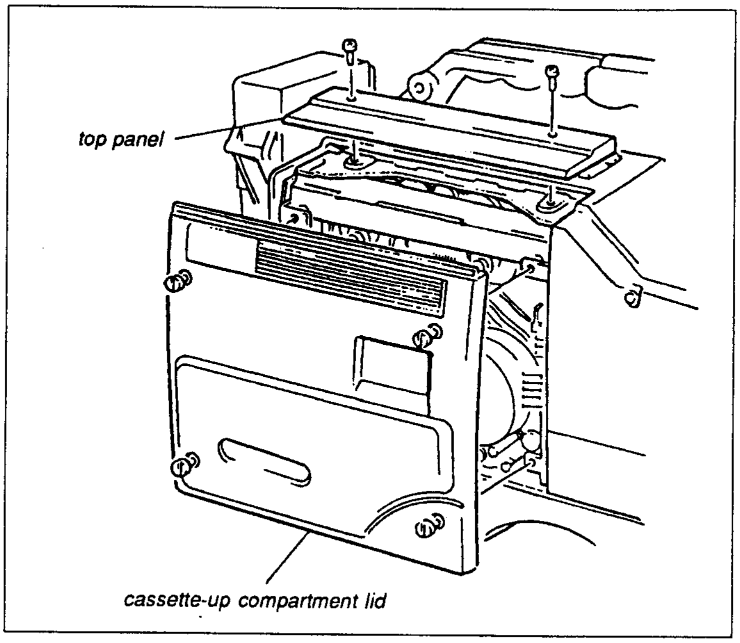
SECTION 5
LINK SYSTEM ALIGNMENT

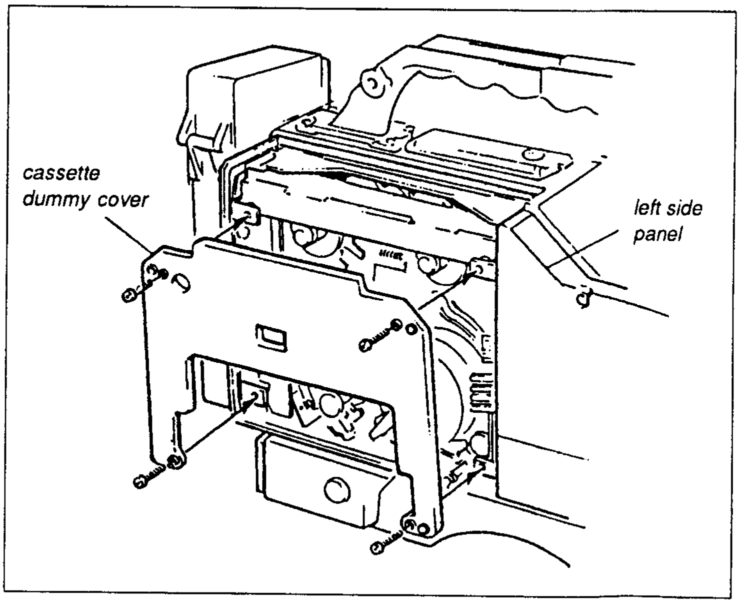
(Preparations)

1. VTR's Mechanical Deck Block Adjustment

Adjust the VTR's mechanical deck block as follows.

(1) Put the VTR into the threading end mode.
(2) Remove the Top Panel.
(3) Remove the Cassette-up Compartment Lid and install the Cassette Dummy Cover which is prepared for service.
(4) Remove the Left Side Panel.


top panel
cassette-up compartment lid


cassette dummy cover
left side panel

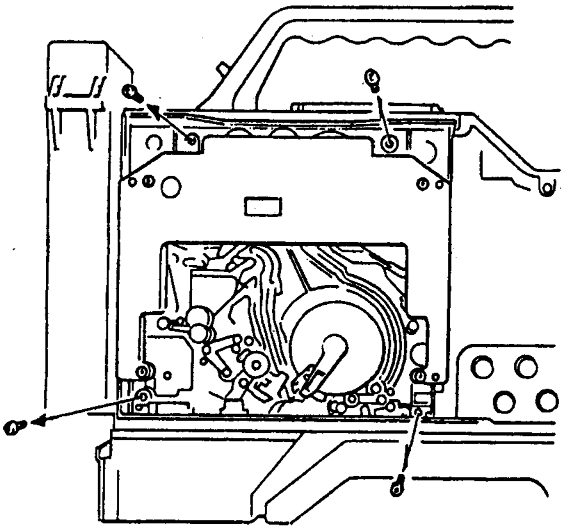
(5) Remove the four screws which secure the mechanical deck block to the unit by using the hexagon bit.

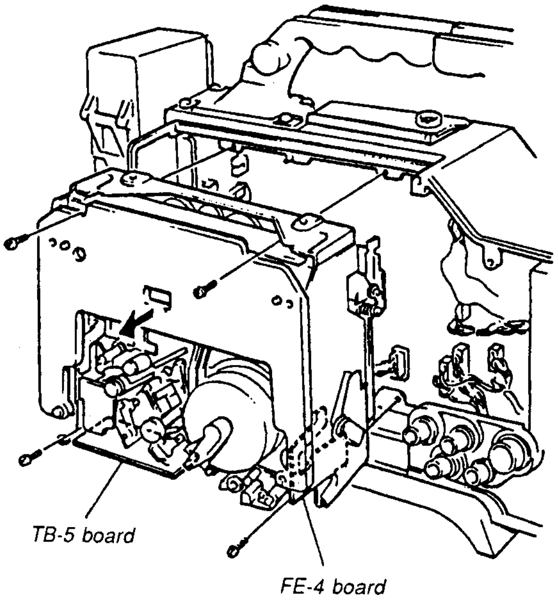
(6) Remove the mechanical deck block from the unit while removing the connectors below on the mother board.

Drum: CN41 and CN42
FE-4 board: CN43
TB-5 board: CN44

(7) Connect the Extension Harness which is prepared for service to the above connectors on the mechanical deck block.

(8) Connect the harness connector of the Extension Harness to the above connectors on the unit's mother board.



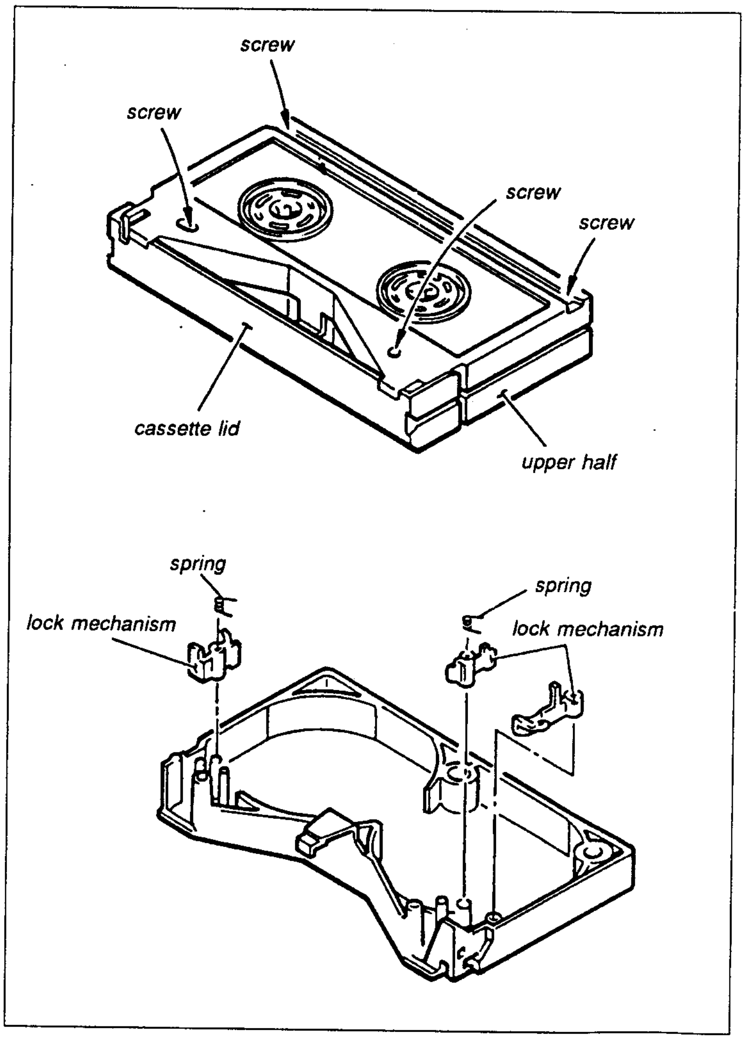


2. Creating the Blank Cassette/Cassette Tape without Lid/Alignment Tape without Lid

Since the VTR is designed to compact size, some mechanical checks and adjustments cannot be performed when a cassette tape lid or cassette tape is installed. Remove the cassette tape lid or cassette tape as follows:

- **Creating the blank cassette**

(1) Remove the four fixing screws on the back of a cassette tape and remove the upper half of the cassette tape as shown in the figure.
(2) Remove the lock mechanism parts and the springs on the left and right.
(3) Remove the cassette lid from the upper half.
(4) Remove the cassette tape.
(5) Install the upper half on the lower half with the four fixing screws from the back side.

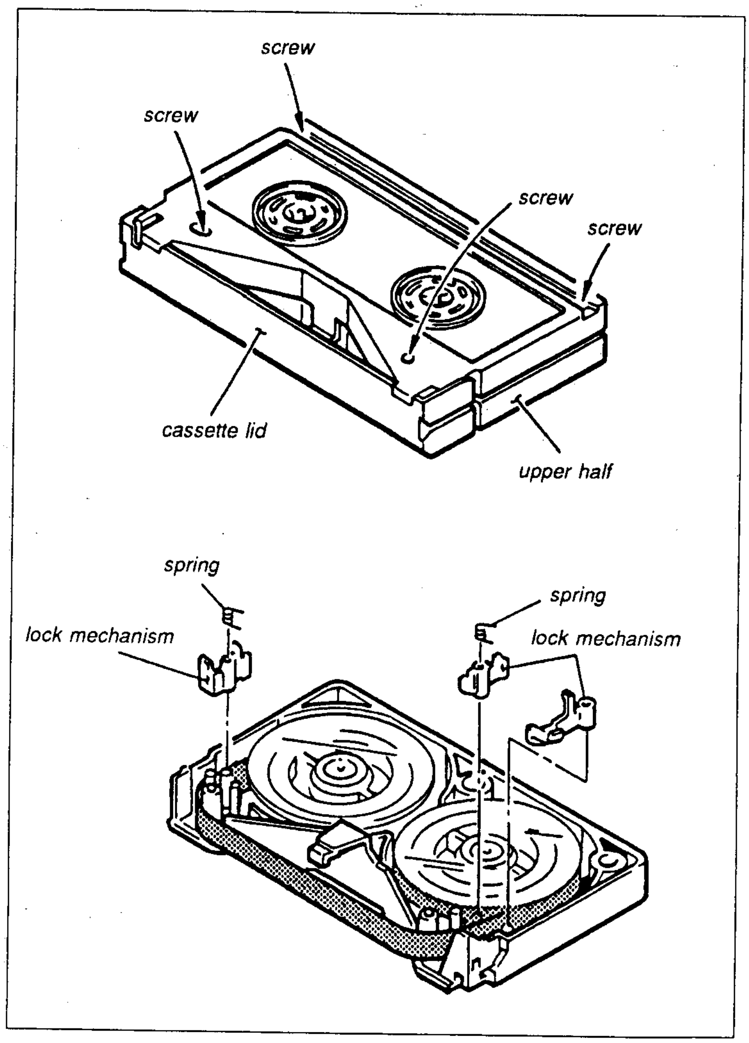

screw
screw
screw
screw
cassette lid
upper half
spring
spring
lock mechanism
lock mechanism

• Creating the Cassette Tape without Lid

(1) Remove the four fixing screws on the back of a cassette tape and remove the upper half of the cassette tape as shown in the figure.
(2) Remove the lock mechanism parts and the springs on the left and right.
(3) Remove the cassette lid from the upper half.
(4) Install the upper half on the lower half with the four fixing screws from the back side.

• Creating the Alignment Tape without Lid

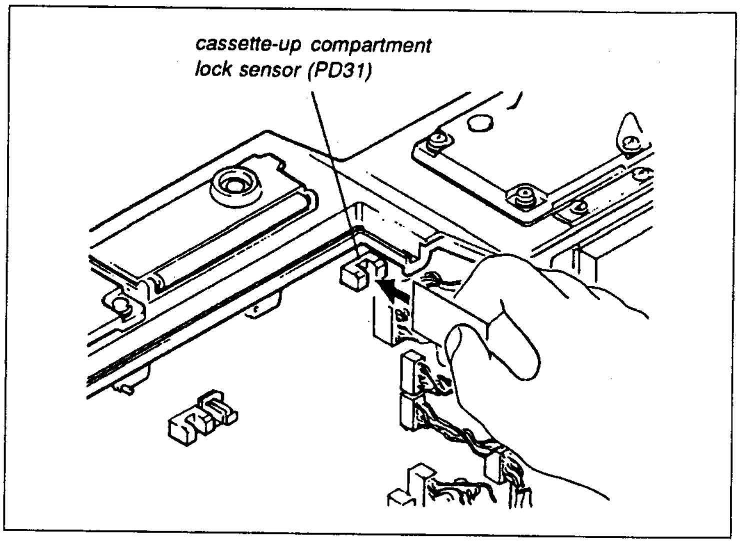
(1) Remove the four fixing screws on the back of a cassette tape and remove the upper half of the alignment tape as shown in the figure.
(2) Remove the lock mechanism lock parts and the springs on the left and right.
(3) Remove the cassette lid from the upper half.
(4) Install the upper half on the lower half with the four fixing screws from the back side.


screw
screw
screw
screw
cassette lid
upper half
spring
spring
lock mechanism
lock mechanism

3. How to Operate the removed Mechanical Deck Block from the VTR

(1) Push down the Cassette-up Compartment.

(2) Insert a paper and so on into the Cassette-up Compartment Lock Sensor as Ref. No. PD31 near the CN52 on the MB-317/P board, and put the unit into the Cassette Lock Mode. The unit will start to thread by this operation.


cassette-up compartment lock sensor (PD31)

5-1. GEAR ASSEMBLY POSITION ADJUSTMENT

Tool: Tension scale (50 g full scale)

Mode: Any mode is acceptable. (Put the unit into the threading mode.)

Check procedure:

(1) Push the Timing Belt in the direction of the arrow with a tension scale as shown in the figure.

(2) Check that the reading of the tension scale meets the required specification, when the clearance between the boss and the Timing Belt is about 0 mm.

Adjustment procedure:

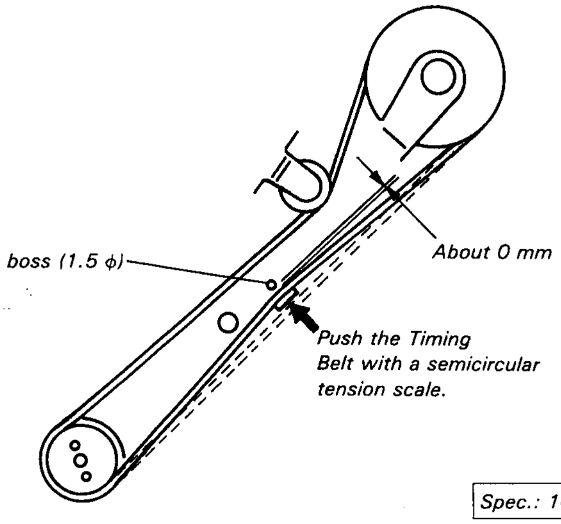
(1) Loosen the fixing screw of Gear Base Ass'y by one or two turns.

(2) Insert a flatblade screwdriver into the notch as shown in the figure, and move the Gear Base Ass'y in the direction as follows:

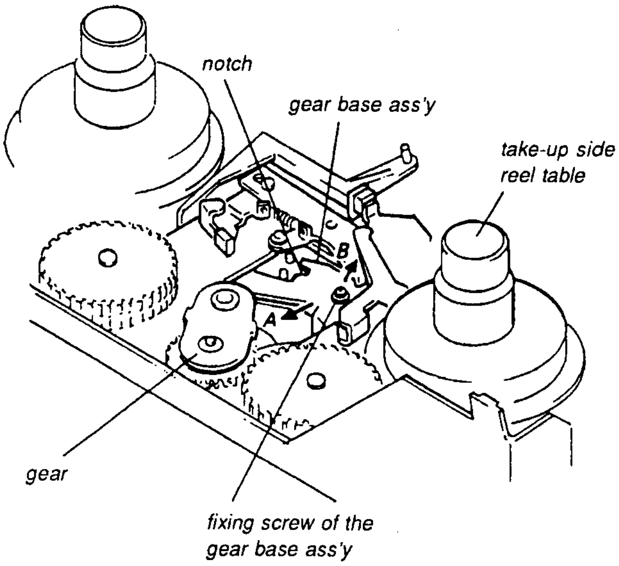
- When the reading of the tension scale is smaller than the required specifi- cation : in the direction of A
- When the reading of the tension scale is bigger than the required specifi- cation : in the direction of B

(3) Tighten the fixing screw of the Gear Base Ass'y.

(4) Perform steps (1) and (2). If the required specification is not satisfied, repeat the adjustment procedures (1) to (4).


boss (1.5 φ)
About 0 mm
Push the Timing Belt with a semicircular tension scale.

Spec.: 10 ± 2 g


notch
gear base ass'y
take-up side reel table
B
A
gear
fixing screw of the gear base ass'y

5-2. PRESS LEVER POSITION CHECK

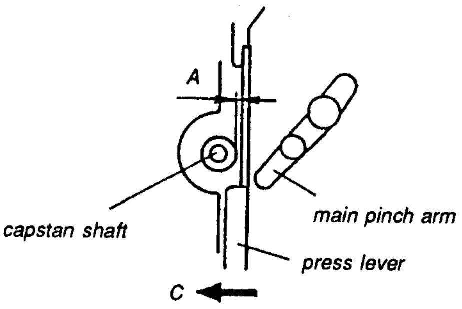
Tool: Blank cassette tape
Wire clearance gauge (0.1mm)
Setting: Remove the Cassette-up Compartment from the mechanical deck.
Mode: Play back the blank cassette tape and turn off the POWER switch.

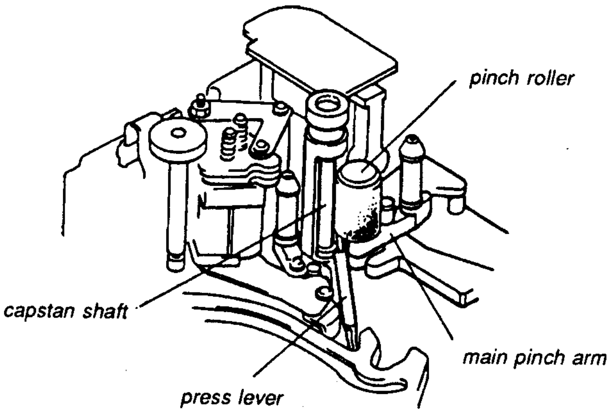
Check procedure:

(1) Insert the blank cassette tape, put the unit into the PLAY mode, then turn off the POWER switch.

(2) When Pushing the Press Lever in the direction of the arrow C, check that clearance A between the capstan shaft and the Press Lever meets the required specification.

- When clearances A do not meet the required specification, perform the Pinch Press Lever Position Adjustment in Section 5-3.


A
capstan shaft
main pinch arm
press lever
C


pinch roller
capstan shaft
main pinch arm
press lever

spec.: A ≦ 0.1 mm

5-3. PINCH PRESS LEVER POSITION ADJUSTMENT

Tool: Blank cassette tape
Wire clearance gauge (0.1, 0.2mm)

Mode: Play back and stop modes with the blank cassette tape.

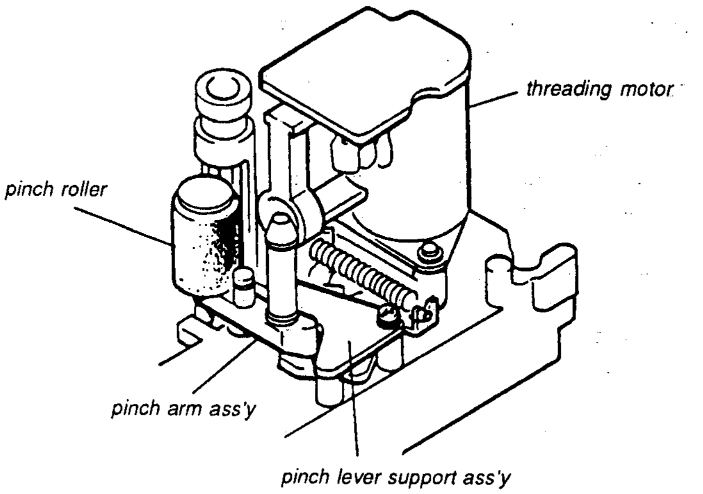
Check procedure:

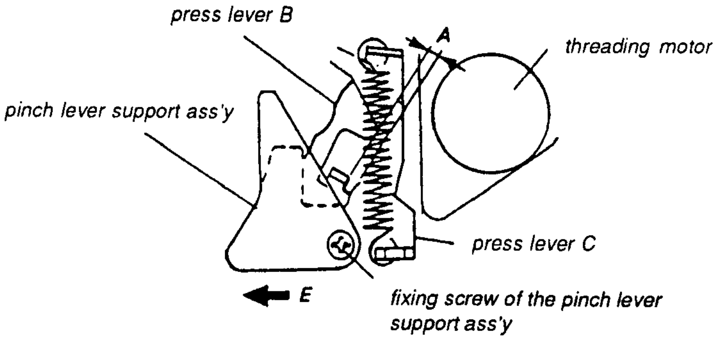
(1) Insert the blank cassette tape and put the unit into the PLAY mode.
(2) Confirm that clearance A between Press Levers (B) and (C) meets the required specification. (Spec. 1)
(3) Put the unit into the STOP mode.
(4) Confirm that clearance B between the pinch roller and the capstan shaft meets the required specification. (Spec. 2)

Adjustment procedure:

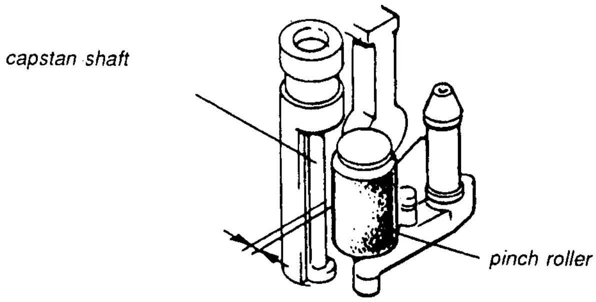
- Adjust so that clearances A and B meet the required specifications.

(1) Insert the blank cassette tape and put the unit into the PLAY mode.
(2) Loosen the fixing screw of the Pinch Lever Support Ass'y by one turn.
(3) Adjust the assembly position so that clearance A between Press Levers (B) and (C) meets the required specification, when pushing the Pinch Lever Support Ass'y in the direction of arrow E.
(4) Tighten the fixing screw of the Pinch Lever Support Ass'y.
(5) Put the unit into the STOP mode and confirm that clearance B between the pinch roller and the capstan shaft meets the required specification.
   - When the specification is not satisfied, repeat Steps (1) through (5).


threading motor
pinch roller
pinch arm ass'y
pinch lever support ass'y


press lever B
A
threading motor
pinch lever support ass'y
press lever C
E
fixing screw of the pinch lever support ass'y

Spec. 1: $A \geqq 0.2$ mm


capstan shaft
pinch roller

Spec. 2: $B \geqq 0.1$ mm

5-4. REEL FG OUTPUT LEVER CHECK

Tool: Blank cassette tape
Extension Board
Oscilloscope

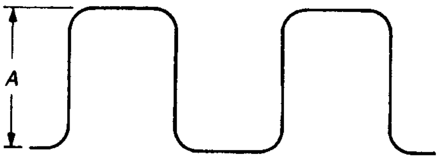
Setting: (1) Extend the SY-117C/P Board with the Extension Board.
(2) Connect the oscilloscope to the measuring point below.
Take-up reel FG:
TP3 / Extension Board
Supply reel FG:
TP4 / Extension Board

Mode: FF/REW mode

Check procedure:

(1) Insert the blank cassette tape and put the unit into the FF mode.
(2) Confirm that the output waveform of the take-up reel FG meets the required specification.
(3) Put the unit into the REW mode.
(4) Confirm that the output waveform of the supply reel FG meets the required specification.

- When the FG output waveform does not meet the required specification, replace the reel table or the sensor.



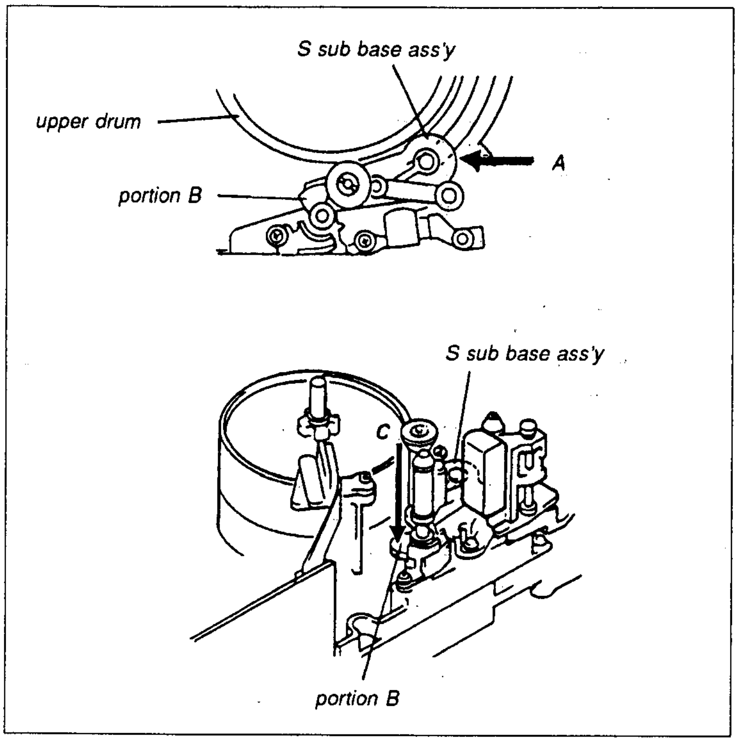
Spec.: $A \geq 4.5$ V

5-5. THREADING POSITION CHECK (SUPPLY SIDE)

Tool: Blank cassette tape
Mode: Put the unit into the threading completion mode and turn off the POWER switch.

Check procedure:

(1) Insert the blank cassette tape, put the unit into the threading completion mode, then turn off the POWER switch.
(2) When Pushing the S Sub Base Ass'y in the direction of the arrow A with a flatblade precision driver (2mm), confirm that it will not move.
(3) When portion B of the S Sub Base ASS'y is pushed in the direction of the arrow C with a flatblade precision driver (2mm), confirm that it will not move in the vertical direction.
(4) Confirm that the specifications are satisfied by repeating Steps (1) through (3) two or three times.

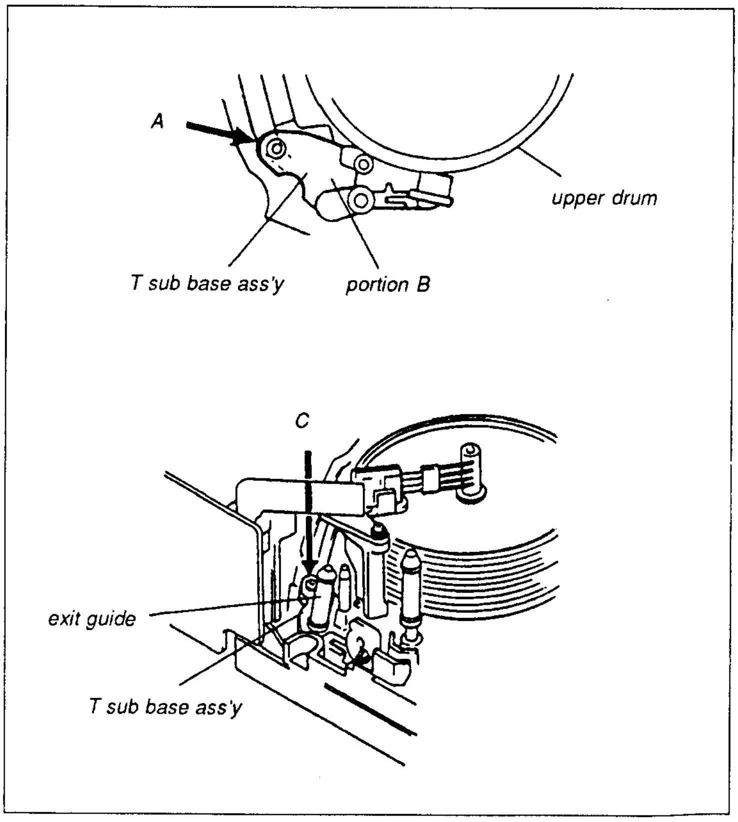


5-6. THREADING POSITION CHECK (TAKE-UP SIDE)

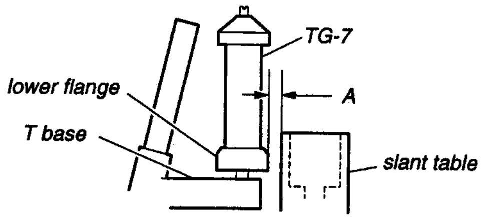
Tool: Blank cassette tape
Mode: Put the unit into the threading completion mode and turn off the POWER switch.

Check procedure:

(1) Insert the blank cassette tape, put the unit into the threading completion mode, and then turn off the POWER switch.
(2) When pushing the T Sub Base Ass'y in the direction of the arrow A with a flatblade precision driver (2mm), confirm that it will not move.
(3) When pushing portion B of the T Sub Base Ass'y in the direction of the arrow C with a flatblade precision driver (2mm), confirm that it will not move in the vertical direction.
(4) Confirm that the required specifications are satisfied by repeating Steps (1) through (3) two or three times.



(5) Check the clearance A between the lower flange of the TG-7 and the slant table so that it meets the specification.


TG-7
lower flange
A
T base
slant table

Spec.: A ≧ 0.1 mm

5-7. IMPEDANCE ROLLER GUIDE II CLEARANCE ADJUSTMENT

Tool: Blank cassette tape
Wire clearance gauge (0.2, 0.4mm)

Mode: Put the unit into the threading completion mode and turn off the POWER switch.

Check procedure:

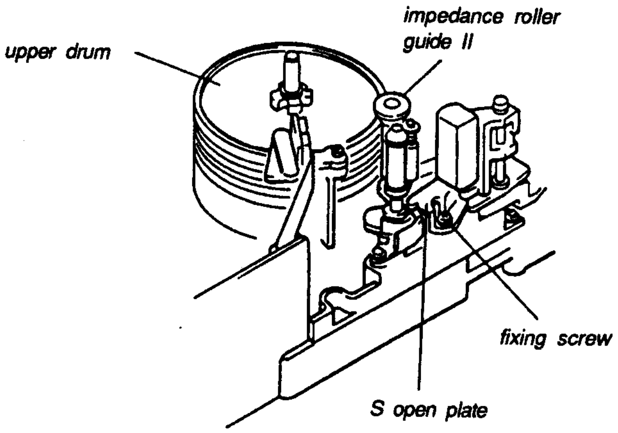
(1) Insert the blank cassette tape, put the unit into the threading completion mode, then turn off the POWER switch.

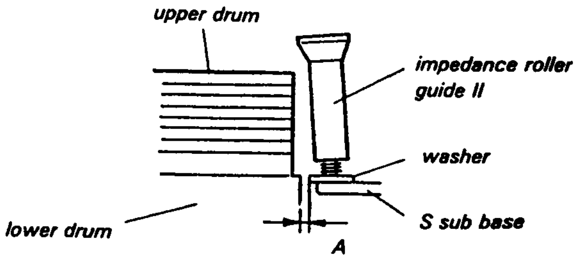
(2) Confirm that clearance A between the lower Drum Ass'y and S sub Base ass'y meets the required specification.

Adjustment procedure:

(1) Loosen the fixing screw of the S Open Plate by one turn and adjust the S Open Plate position so that clearance A meets the required specification.

(2) Perform Steps (1) and (2) in the check procedure and confirm that the required specification is satisfied.


upper drum
impedance roller guide II
fixing screw
S open plate


upper drum
impedance roller guide II
washer
lower drum
S sub base
A

Spec.: A = 0.05 ~ 0.1 mm

5-8. TENSION REGULATOR OPERATING POSITION ADJUSTMENT

Tool: Cassette tape without a lid (BCT-30G)
(at the tape beginning)

Mode: Play back the cassette tape without a lid.

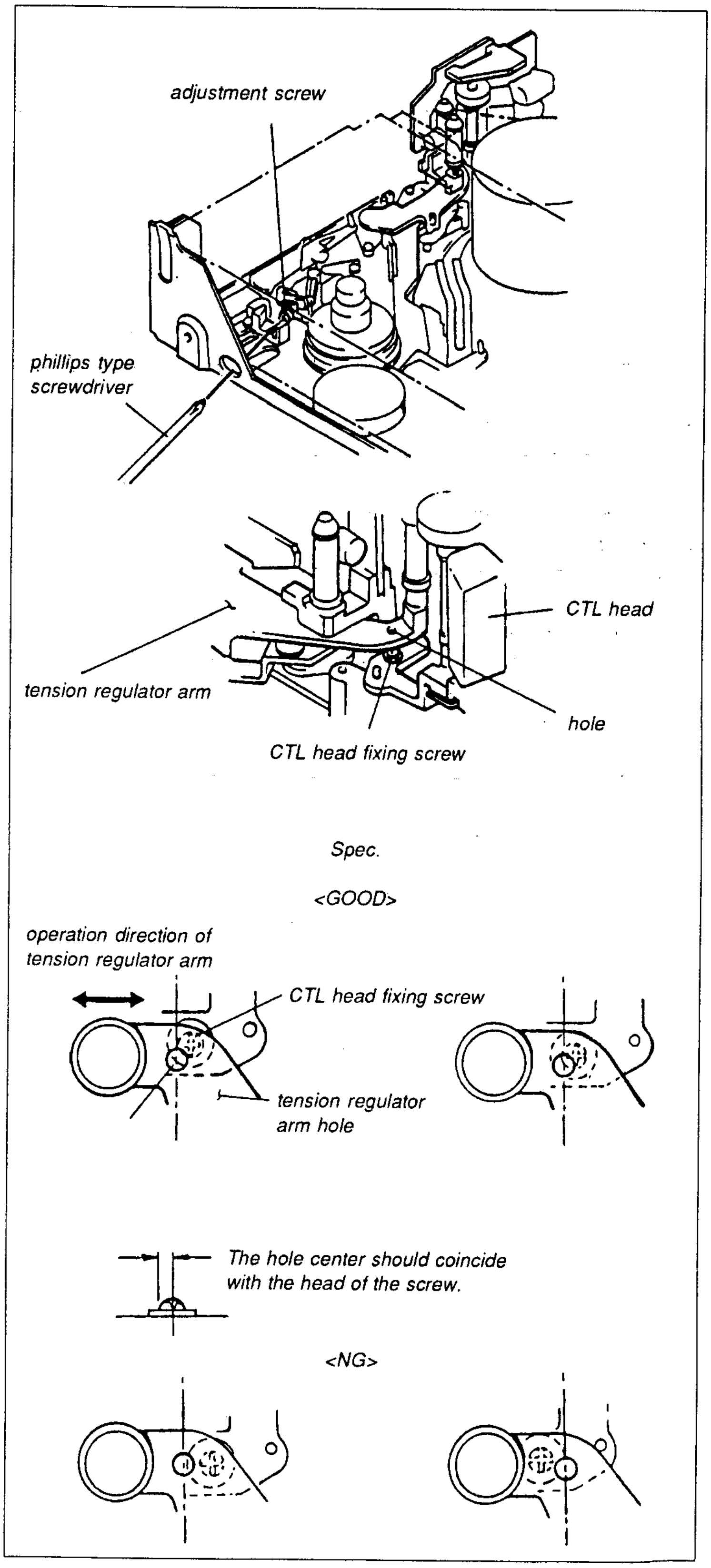
Check procedure:

(1) Confirm that the positional relationship between the Tension Regulator Arm's hole and the CTL Head Fixing Screw meets the required specification.

Adjustment procedure:

(1) Insert a phillips type screwdriver through the hole shown in the figure.

(2) Turn the adjustment screw so that the required specification is satisfied.


adjustment screw
phillips type screwdriver
CTL head
tension regulator arm
hole
CTL head fixing screw
Spec.
<GOOD>
operation direction of tension regulator arm
CTL head fixing screw
tension regulator arm hole
The hole center should coincide with the head of the screw.
<NG>

SECTION 6
TAPE RUN ALIGNMENT

(Preparations)

1. VTR's Mechanical Deck Block Adjustment

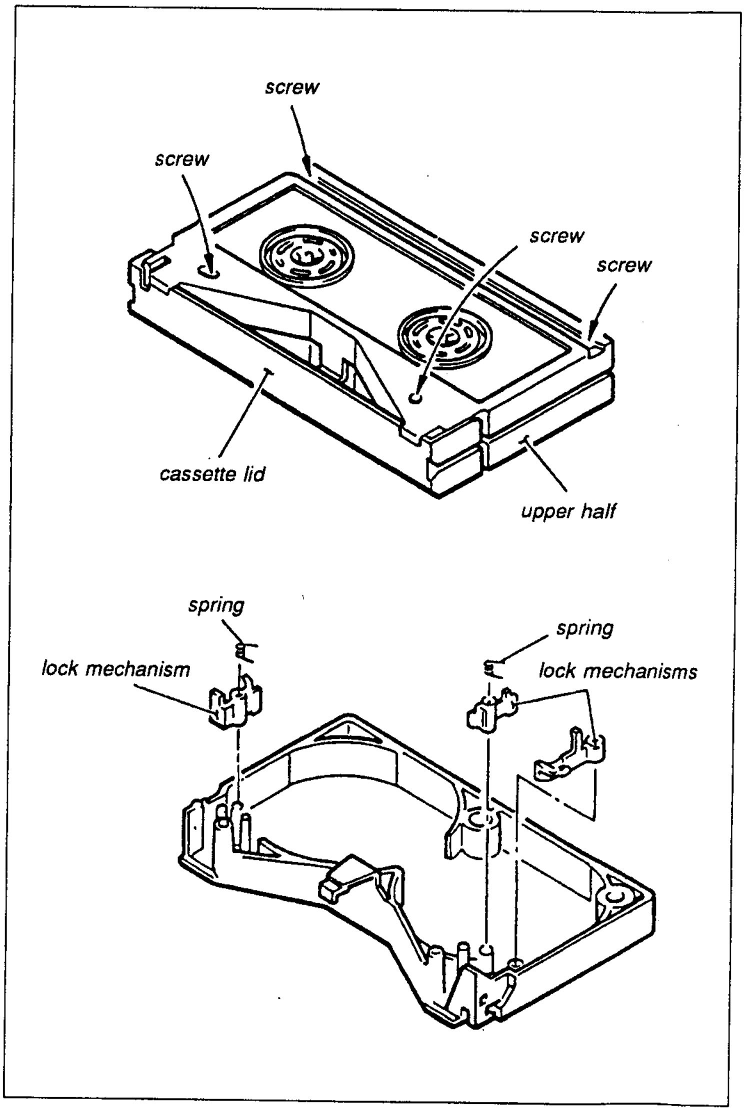
When the mechanical deck assy is removed from the unit for performing the tape run alignment, please refer to SECTION 5 LINK SYSTEM ALIGNMENT. 6-5. TAPE PATH ADJUSTMENT, 6-8. TRACKING ADJUSTMENT must be performed after mechanical deck assy is reinstalled in the unit.

2. Creating the Blank Cassette/Cassette Tape without Lid/Alignment Tape without Lid

Since the VTR is designed to compact size, some mechanical checks and adjustments cannot be performed when a cassette tape lid or cassette tape is installed. Remove the cassette tape lid or cassette tape as follows:

- Creating the blank cassette

(1) Remove the four fixing screws on the back of a cassette tape and remove the upper half of the cassette tape as shown in the figure.
(2) Remove the lock mechanism parts and the springs on the left and right.
(3) Remove the cassette lid from the upper half.
(4) Remove the cassette tape.
(5) Install the upper half on the lower half with the four fixing screws from the back side.

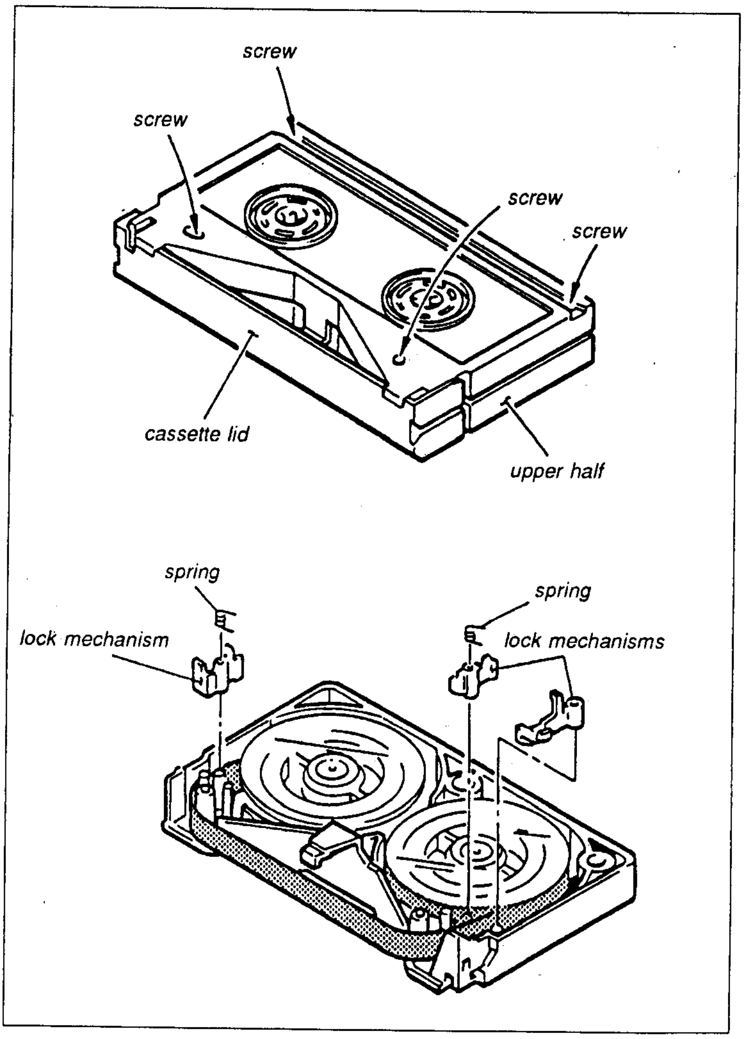


- **Creating the Cassette Tape without Lid**

(1) Remove the four fixing screws on the back of a cassette tape and remove the upper half of the cassette tape as shown in the figure.
(2) Remove the lock mechanism parts and the springs on the left and right.
(3) Remove the cassette lid from the upper half.
(4) Install the upper half on the lower half with the four fixing screws from the back side.

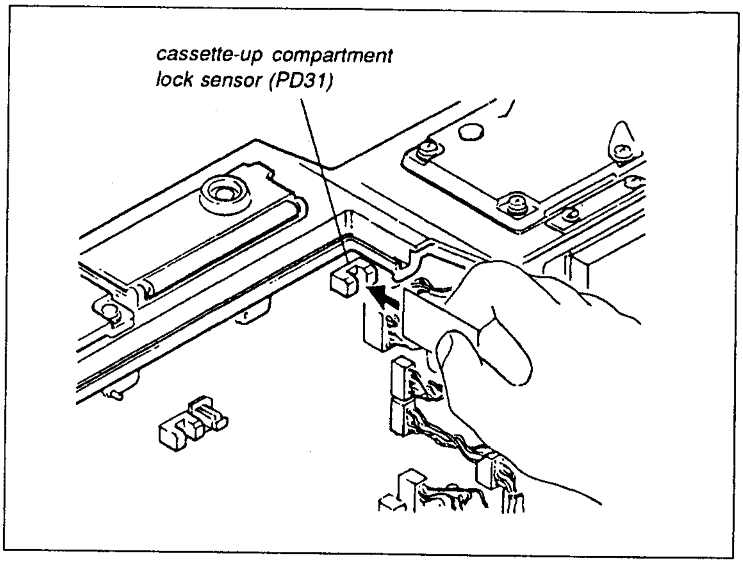
- **Creating the Alignment Tape without Lid**

(1) Remove the four fixing screws on the back of a cassette tape and remove the upper half of the alignment tape as shown in the figure.
(2) Remove the lock mechanism lock parts and the springs on the left and right.
(3) Remove the cassette lid from the upper half.
(4) Install the upper half on the lower half with the four fixing screws from the back side.


screw
screw
screw
screw
cassette lid
upper half
spring
spring
lock mechanism
lock mechanisms

3. How to Operate the removed Mechanical Deck Block from the VTR

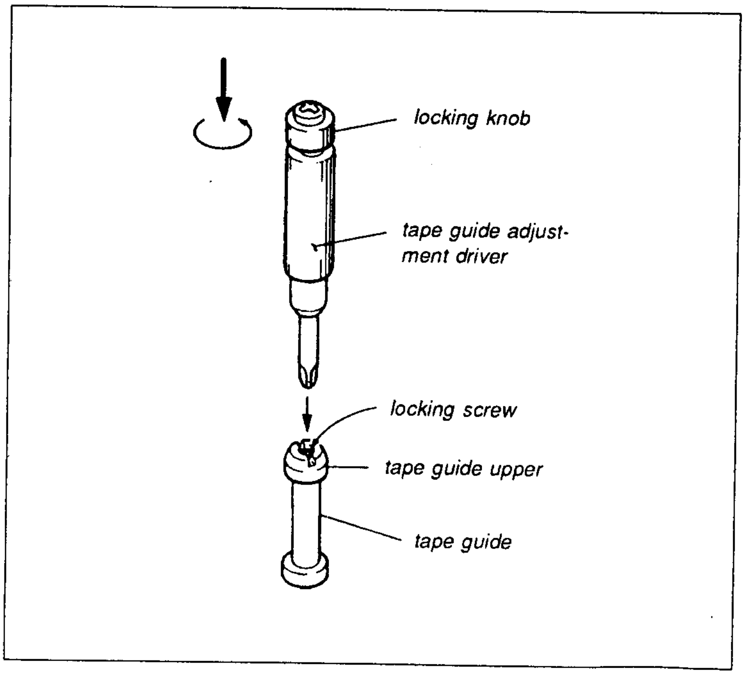
(1) Push down the Cassette-up Compartment.
(2) Insert a paper and so on into the Cassette-up Compartment Lock Sensor as Ref. No. PD31 near the CN52 on the MB-317/P board, and put the unit into the Cassette Lock Mode. The unit will start to thread by this operation.



4. Height Adjustment Procedure of the Tape Guide

When the height adjustment of the tape guide is performed in the Tape Run Alignment, use the tape guide adjustment driver (J-6321-500-A) prepared for the maintenance tool. After the height adjustment of the tape guide is completed, tighten the locking screw of the tape guide upper flange with the torque driver referring to Sec. 3-15.

(1) Put the flatblade of the tape guide adjustment driver in the (-)slot of the tape guide.
(2) Push down the locking knob of the adjustment driver and turn it counterclockwise about one turn.
(3) Turn the adjustment driver and adjust the height of the tape guide.
(4) After the adjustment is completed, tighten the locking screw of the tape guide upper flange referring to Sec. 3-15.
(5) Apply the locking compound to the locking screw. (Never apply the locking compound to the tape running surface of the tape guide, upper and lower flanges.)



6-1. TAPE PATH ADJUSTMENT (PLAY MODE)

Tool: Cassette tape without a lid (BCT-30G)
Tape guide adjustment driver

Mode: Play back the cassette tape without a lid.

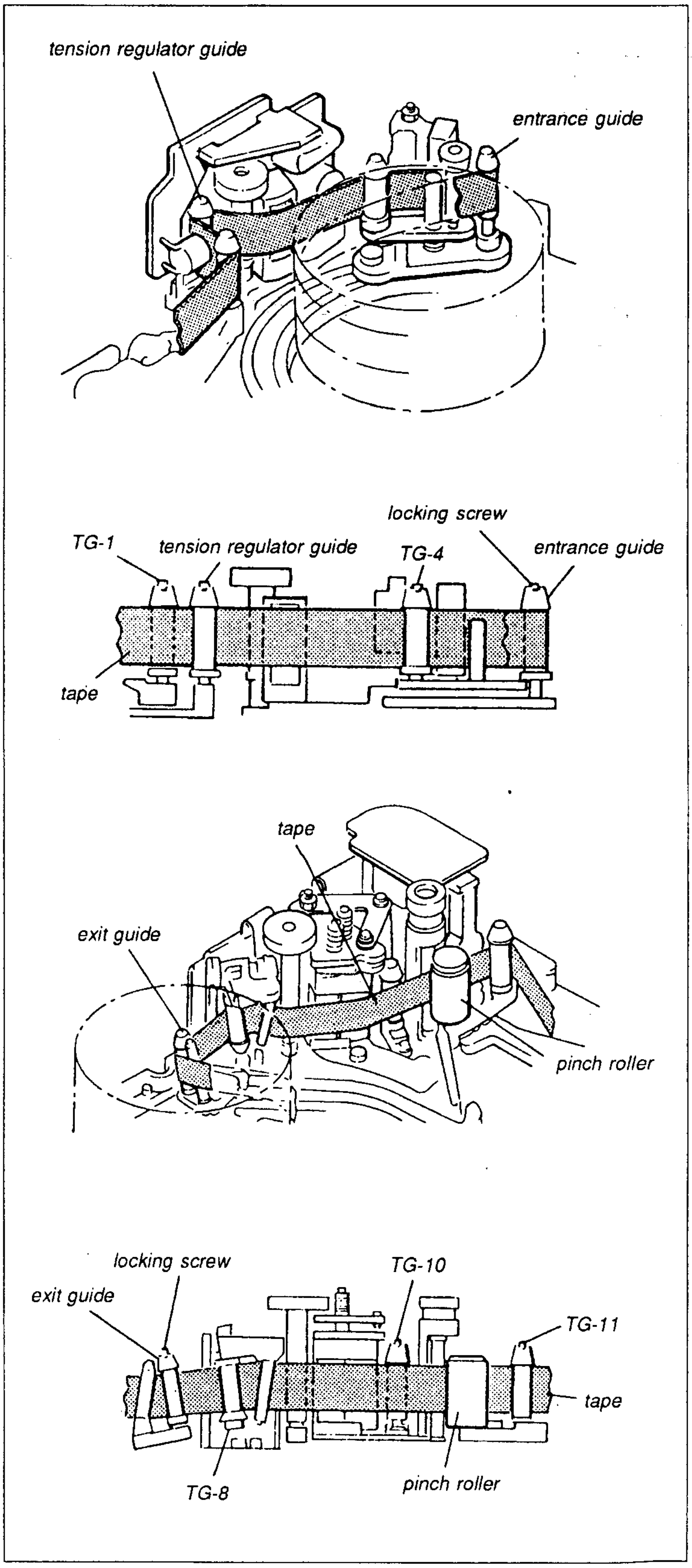
Check procedure:

(1) Insert the cassette tape without a lid (BCT-30G) and put the unit into the PLAY mode.
(2) Confirm that the tape runs without curl at the flanges of the TG-1, Tension Regulator Guide, TG-4, and Entrance Guide.
(3) Confirm that the tape runs without curl at the flanges of the Exit Guide, TG-8, TG-10, and TG-11.

Adjustment procedure:

- **Tape curl at the Entrance Guide or at the lead at the drum entrance side.**

(1) Loosen the Upper Flange Locking Screw of the Entrance Guide with tape guide adjustment driver by one or two turns.
(2) Turn and adjust the flange of the Entrance Guide so that no tape curl occurs at the Upper Flange of the Entrance Guide and the tape runs along the lead at the drum entrance side.
(3) Temporarily tighten the Upper Flange Locking Screw of the Entrance Guide.
(4) Check that the tape runs without curl at the flanges of the TG-1 Tension Regulator Guide, TG-4, and Entrance Guide.


tension regulator guide
entrance guide
locking screw
TG-1
tension regulator guide
TG-4
entrance guide
tape
tape
exit guide
pinch roller
locking screw
TG-10
exit guide
TG-11
tape
TG-8
pinch roller

- **Tape curl at the Exit Guide or at the lead at the drum exit side.**

(5) Loosen the Upper Flange Locking Screw of the Exit Guide with a tape guide adjustment driver by one or two turns.

(6) Turn with a tape guide adjustment driver and adjust the flange of the Exit Guide so that no tape curl occurs at the Upper Flange of the Exit Guide and the tape runs along the lead at the drum exit side.

(7) Temporarily tighten the Upper Flange Locking Screw of the Exit Guide.

(8) Insert the cassette tape without a lid (BCT-30G), put the unit into the PLAY mode, and confirm that the tape runs without curl at the flanges of each guide.

6-2. TAPE PATH CHECK (FF AND REW MODES)

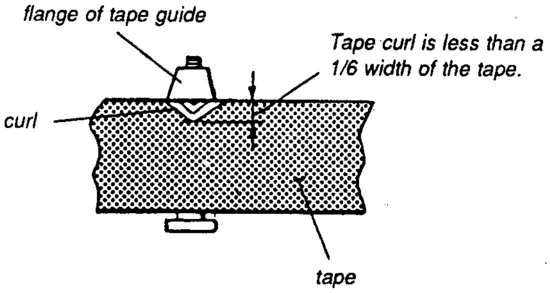
Tool: Cassette tape without a lid (BCT-30G) (at the complete tape end)

Mode: Fast-forward and rewind mode with the cassette tape without a lid.

Check procedure:

(1) Insert the cassette tape without a lid (BCT-30G), put the unit into the FF mode, and confirm that the tape runs without curl at the flanges of each guide. If occures, curl less than one sixth of the tape width can be acceptable.

(2) Put the unit into the REW mode and confirm that the tape runs without curl at the flanges of each guide. If occures, curl less than one sixth of the tape width can be acceptable.



- When the tape curl does not satisfy the required specification, perform the Tape Path Adjustment (PLAY mode) in Section 6-1 again.

6-3. TAPE THREADING/UNTHREADING CHECK

Tool: Cassette tape without a lid (BCT-30G) (at the complete tape beginning)
Cassette tape without a lid (BCT-30G) (at the complete tape end)

Mode: Thread the cassette tape without a lid.

Check procedure:

(1) Thread the cassette tape without a lid at the complete tape beginning. Confirm that the tape is threaded at the upper and lower flanges of the Entrance and Exit Guide Rollers without curl at this time.

(2) Put up the mechanical deck block with the cassette tape in the upper position and drum in the lower position.

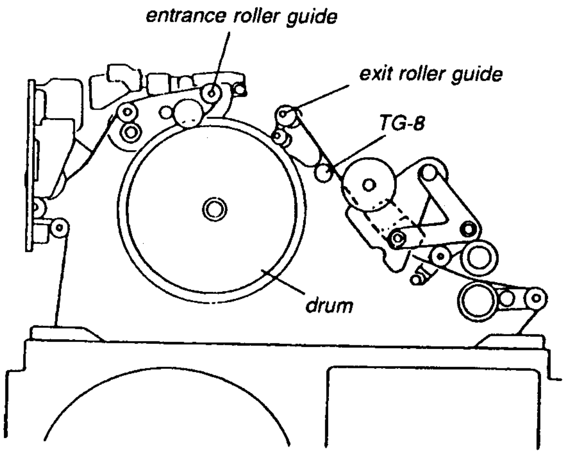
(3) Check that the threading and unthreading operatious is smooth

(4) Repeat Steps (1) through (3) two or three times and confirm that the required specification is satisfied.

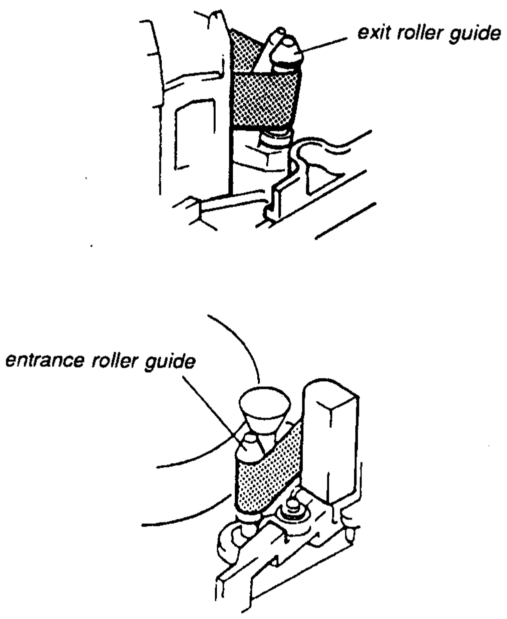
(5) Thread the cassette tape without a lid at the complete tape end.

(6) Check as in Step (1).

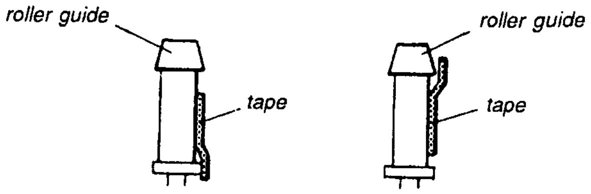
(7) Check as in Steps (1) through (4).


entrance roller guide
exit roller guide
TG-8
drum

<GOOD>


exit roller guide
entrance roller guide

<NG>


roller guide
tape
roller guide
tape

6-4. PLAY BACK TENSION ADJUSTMENT

Tool: Cassette tape without a lid (BCT-30G)
(at the tape beginning)
Tentelometer: T2-H7-UMC

Mode: Play back the cassette tape without a lid

Check procedure:

(1) Confirm that the tension regulator operating position meets the required specification in Sec. 5-8. Tension Regulator Operating Position Adjustment.

(2) Insert the Tentelometer between Full Erase Head and Guide Roller (TG-4) as shown in the figure.

(3) Confirm that the reading meets the required specification.

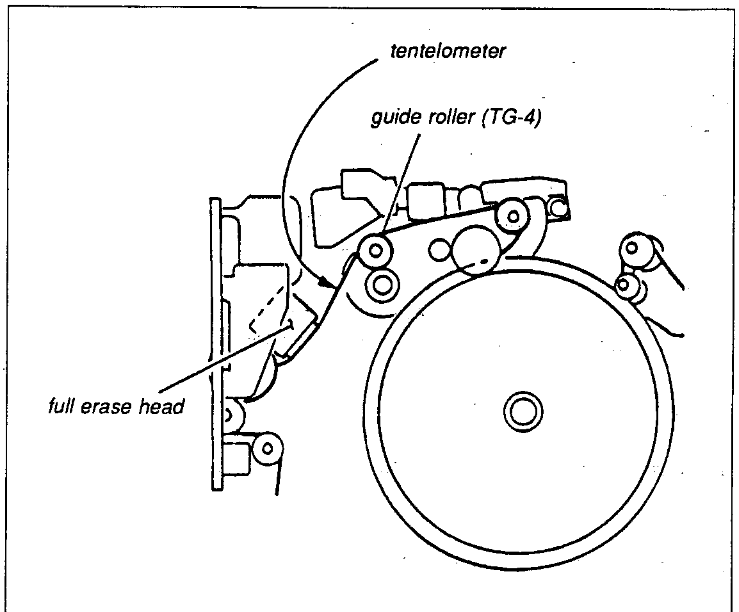
Adjustment procedure:

(1) Adjust the tension regulator operating position so that the specification is satisfied within the limits required in Sec. 5-8.

(2) When the required specification is not satisfied, replace the Supply Side Reel Table and Tension Regulator Band.

(3) Perform the Sec. 5-8. Tension Regulator Operating Position Adjustment.

(4) Perform the check procedure.



Spec.: 23.5~27g

6-5. TAPE PATH ADJUSTMENT (AROUND THE PINCH ROLLER)

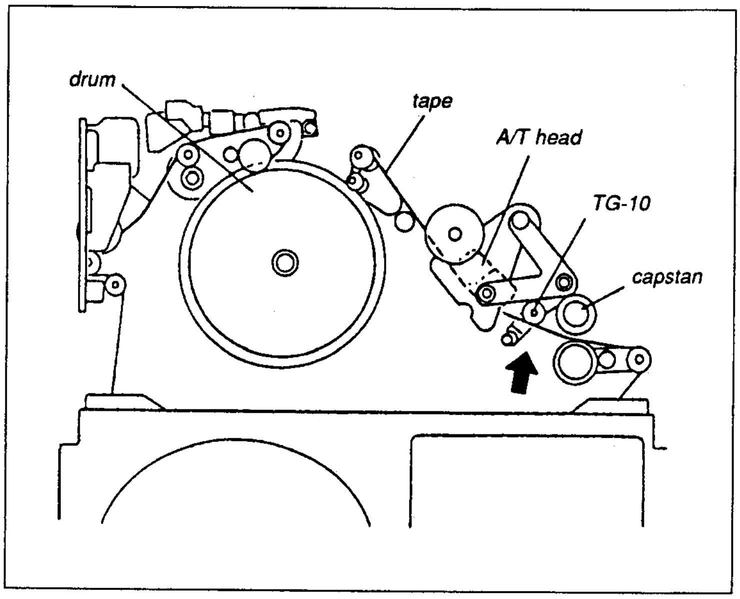
Tool: Cassette tape without a lid (BCT-30G)
Mode: Play back the cassette tape without a lid.
Check procedure:

(1) Insert the cassette tape without a lid (BCT-30G) and put the unit into the PLAY mode.

(2) Put the unit into the PLAY and STOP modes two or three times every two or three seconds and confirm that the tape path of the designated portion (between the A/T Head and capstan shaft) indicated by the arrow satisfies the specifications below.
  - No uneven tape tension occurs at the upper and lower edges of the tape.
  - When the pinch roller is pressed against the capstan shaft, any tape wrinkle occurring on the tape disappears within one second.
  - The tape is not damaged.

(3) After unthreading is completed, put the unit into the threading and PLAY modes two or three times.

(4) Put the unit into the PLAY mode and conrirm that the tape path of the portion indicated by the arrow meets the required specifications in Step (2).



6-6. PLAY TORQUE CHECK

Tool: FWD torque cassette tape, SL-0003C
Mode: PLAY mode with torque cassette
Check procedure:

(1) Put the unit into PLAY mode with a torque cassette.

(2) After 2 or 3 seconds later, when the pinch roller is pressed against the capstan shaft, confirm that the indication of the meter on the T side of FWD torque cassette tape meets the required specification.

- When the required specification is not satisfied, replace the T Ider Ass'y.

Spec.: PLAY torque
36 ± 8 g·cm

6-7. REV TORQUE CHECK

Tool: FWD torque cassette tape, SL-0003C
Servo remote control tool
Preparation:
Connect the connector on the servo remote control tool to CN2 on the SV-97A/P Board.
Mode: Insert the torque cassette tape and put the unit into the PLAY STOP REV mode.
Check procedure:

(1) Insert the torque cassette tape and switch over the mode in the following steps.
(Put the unit into the REV mode finally.)

PLAY → STOP → REV
(When putting the unit into the PLAY and STOP modes, push the PLAY and STOP buttons on the VTR, and when putting into the REV mode, push the REV botton on the servo remote control tool.)

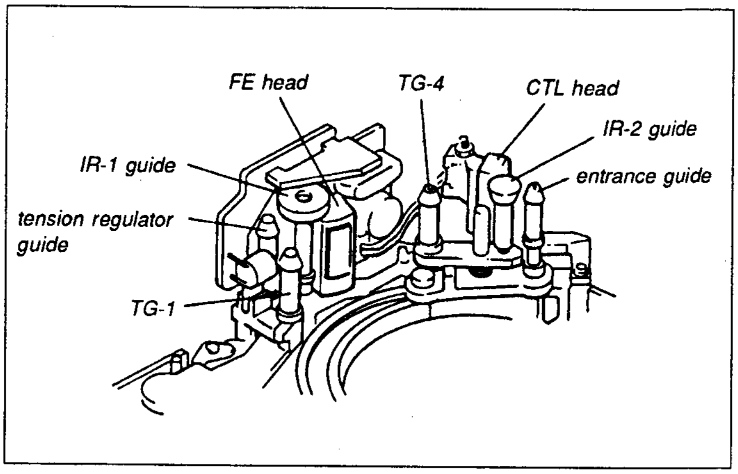
(2) After 2 or 3 seconds later, confirm that the indication of the meter on the S side of FWD torque cassette tape meets the required specification.

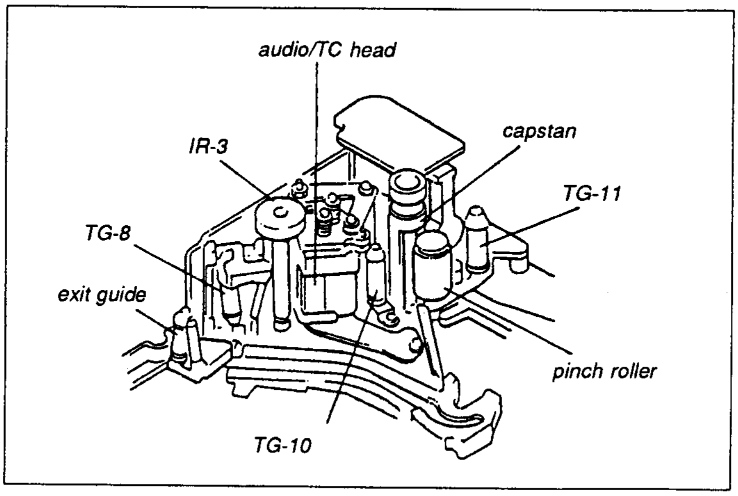
- When the required specification is not satisfied, replace the S Idler Ass'y.

Spec.: REV torque
55 ± 15 g·cm

6-8. TRACKING ADJUSTMENT

- The tape guides and heads at the drum entrance side in this adjustment are illustrated.
- The tape guides and heads at the drum exit side in this adjustment are illustrated.
- Before performing the tracking adjustment, clean the tape guide, stationary head, drum, capstan shaft, and pinch roller described above with a cloth moistened with cleaning fluid.
- The BVW-300's drum mounts four video heads for Y and C heads, respectively. The video tracking adjustment is made with channel 1 of the Y head as reference.
- After the tracking adjustment is completed, perform the adjustment as follows:
  Sec 6-1 Tape Path Adjustment
  (Play Mode)
  Sec 6-2 Tape Path Check
  (FF and REW Modes)
  Sec 6-9 CTL Head Height Adjustment
  Sec 6-10 CTL Head Position Adjustment
  Sec 6-12 TC Head Position Adjustment
  Sec 6-12 TC Head Position Adjustment
  (Check)
  Sec 6-13 Audio Head Height Adjustment
  Sec 6-14 Audio Head Phase Adjustment


FE head
TG-4
CTL head
IR-2 guide
IR-1 guide
entrance guide
tension regulator guide
TG-1


audio/TC head
capstan
IR-3
TG-11
TG-8
exit guide
pinch roller
TG-10

Tool: Alignment tape without a lid (CR2-1B/1BPS)
Dental mirror
Oscilloscope
Tape guide adjustment driver
Servo remote control tool
Extension board

Setting: (1) Extend the VP-24/P Board with an extension board.
(2) Connect the connector of the servo remote control tool to the CN2 on the SV-97A/P Board.

Mode: Play back the alignment tape.

Check procedure:

(1) Connect the oscilloscope as follows:
CH-1: TP33 / Extension Board
(waveforms of Y head in CH1 to CH4)
CH-2: TP25 / Extension Board
(Stair Pulse)
TRIG: TP25 / Extension Board
(Stair Pulse)

(2) Insert the alignment tape CR2-1B/1BPS and put the unit into the PLAY mode.

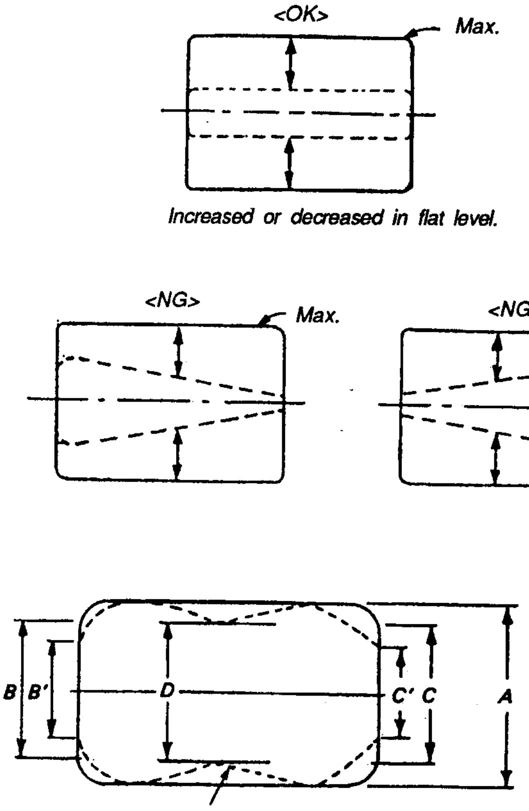
(3) Confirm that the waveforms of channels 1 through 4 of the Y head meets the required specificasions of the Steps (4) and (5).

(4) Confirm that the RF envelope waveform maintains flat while the amplitude increases and decreases, when pushed the (+) or (–) button of the tracking control on a servo remote control tool.

(5) Check that the RF envelope waveform head-to-tape contact and fluctuation are within the specification at the maximum amplitude.

(6) Connect the oscilloscope as follows:
CH-1: TP31 / Extension Board
(waveforms of CH1 through CH4 of C head)
CH-2: TP25 / Extension Board
(Stair pulse)
TRIG: TP25 / Extension Board

(7) Confirm that the waveforms of channels 1 through 4 of the C head meets the required specifications of the Steps (4) and (5).



Increased or decreased in flat level.

RF output level deterioration due to fluctuation

$$\frac{B}{A} \geq 0.8$$

$$\frac{C}{A} \geq 0.8$$

$$\frac{D}{A} \geq 0.9$$

$$\frac{B'}{B} \geq 0.9$$

$$\frac{C'}{C} \geq 0.9$$

A: *Maximum output level*
D: *Minimum output level due to fluctuation in the center portion*
C, B: *Maximum output level at entrance and exit side*
C', B': *Minimum output level due to fluctuation at entrance and exit side*

Adjustment procedure:

(1) Connect the oscilloscope as follows:
CH-1: TP33 / Extension Board
CH-2: TP25 / Extension Board
TRIG: TP25 / Extension Board

(2) Insert the alignment tape CR2-1B/1BPS and put the unit into the PLAY mode.

(3) Push the (–) button of the tracking control on the servo remote control tool so that the RF envelope waveform is made 70 to 80% of the maximum amplitude.

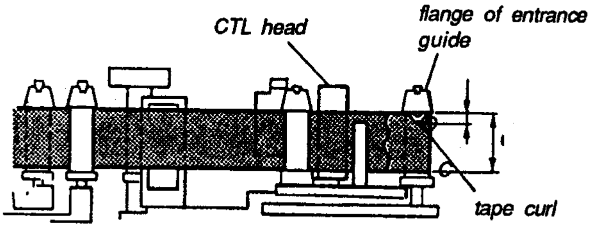
- To make a tracking adjustment at entrance side, perform Steps (4) through (8) plus Steps (14) and after. To make a tracking adjustment at exit side, perform Steps (9) through (13) plus Steps (14) and after.

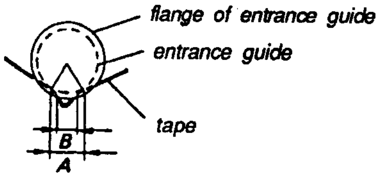
(4) Loosen the Upper Flange Locking Screw of the Entrance Guide by one or two turns with the tape guide adjustment driver.

(5) Turn the upper flange of the Entrance Guide with the tape guide adjustment driver and adjust so that the required specifications below are satisfied.
   (i) Adjust the RF envelope waveform at entrance side in sequence of Fig.1, Fig.2, and Fig.3.
   (ii) No tape curl occurs at the upper flange of the Entrance Guide.
   (iii) The tape touches the lead at the drum entrance side.

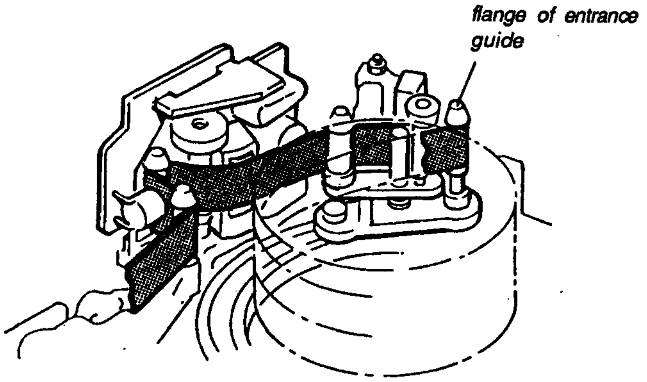
(6) Tighten the Upper Flange Locking Screw of the Entrance Guide with the tape guide adjustment driver.

(7) Put the unit into the EJECT and PLAY modes two or three times and confirm that the required specifications in Step (5) are satisfied.


CTL head
flange of entrance guide
tape curl


flange of entrance guide
entrance guide
tape
B
A

Spec.: $\frac{B}{A} \leq \frac{1}{2}$
$\frac{D}{C} \leq \frac{1}{10}$


flange of entrance guide

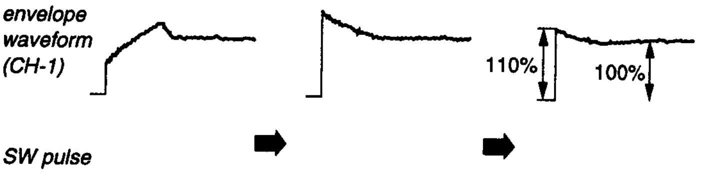

envelope waveform (CH-1)
SW pulse (CH-2)
110%
100%

Fig. 1 Fig. 2 Fig. 3

(8) When raised the mechanical deck with the cassette tape in the upper position and the drum in the lower position, check that the RF envelope waveform at the entrance side meets the required specification.

(9) Loosen the Upper Flange Locking Screw of the Exit Guide by one or two turns with a tape guide adjustment driver.

(10) Turn the upper flange of the Exit Guide with the tape guide adjustment tool and adjust so that the required specifications below are satisfied.
  (i) The RF envelope waveform at exit side make flat.
  (ii) No tape curl occurs at the upper flange of the Exit Guide.
  (iii) The tape touches the lead at the drum exit side.

(11) Tighten the Upper Flange Locking Screw of the Exit Guide with the tape guide adjustment driver.

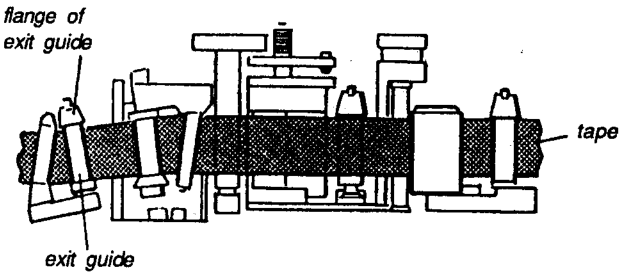
(12) Repeat the EJECT and PLAY modes two or three times and confirm that Step (10) is satisfied.

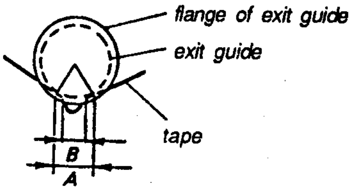
(13) When raised the mechanical deck with the cassette tape in the upper position and the drum in the lower position, confirm that the RF envelope waveform at the exit side meets the required specification.

(14) Connect the oscilloscope as follows:
CH-1: TP31 / Extension Board
CH-2: TP25 / Extension Board
TRIG: TP25 / Extension Board

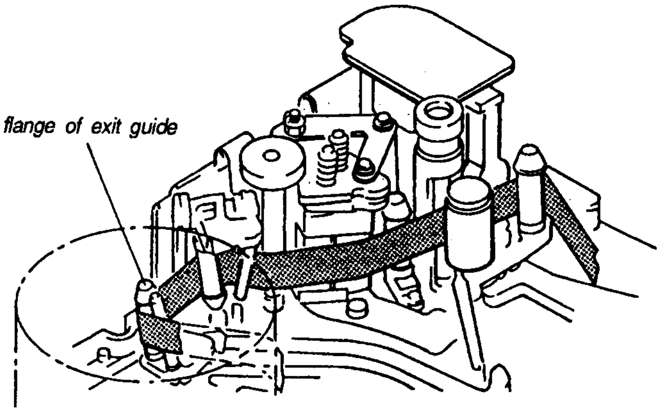
(15) When pushed the (+) or (–) button of the tracking control on the servo remote control tool, confirm that the RF envelope waveform is increased or decreased in a flat level.

(16) Perform the adjustments as follows:
Sec 6-1 Tape Path Adjustment (Play Mode)
Sec 6-2 Tape Path Check (FF and REW Mode)

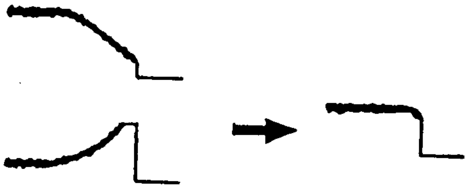




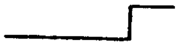
Spec.: $\frac{B}{A} \leq \frac{1}{2}$



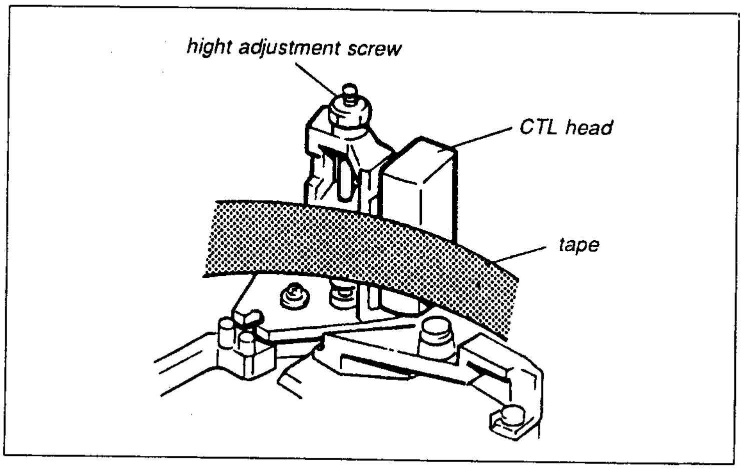
envelop waveform (CH-1)



stair pulse (CH-2)



6-9. CTL HEAD HEIGHT ADJUSTMENT



Tool: Alignment tape without a lid (CR8-1A/1APS)
Oscilloscope
Extension Board

Setting: (1) Extend the SV-97A/P Board with an extension board.
(2) Connect the oscilloscope as follows:
CH-1:TP38 / Extension Board

Mode: Play back the alignment tape.

Adjustment procedure:

(1) Play back a 1 kHz audio signal which is recorded on the CTL track of the alignment tape.
(2) Turn the hight adjustment screw so that the output waveform is maximized.

6-10. CTL HEAD POSITION ADJUSTMENT

- The BVW-300's drum mounts four video heads for Y and C heads, respectively. The CTL head position adjustment is made with channel 1 of the Y head as reference.

Tool: Alignment tape without a lid (CR2-1B/1BPS)
Oscilloscope
Extension Board
Servo remote control tool

Setting: (1) Extend the VP-24/P Board with an extension board.
(2) Connect the connector of the servo remote control tool to the CN2 of the SV-97A/P Board.
(3) Connect the oscilloscope as follows:
CH-1: TP33 /Extension Board
CH-2: TP25 / Extension Board
TRIG: TP25 / Extension Board

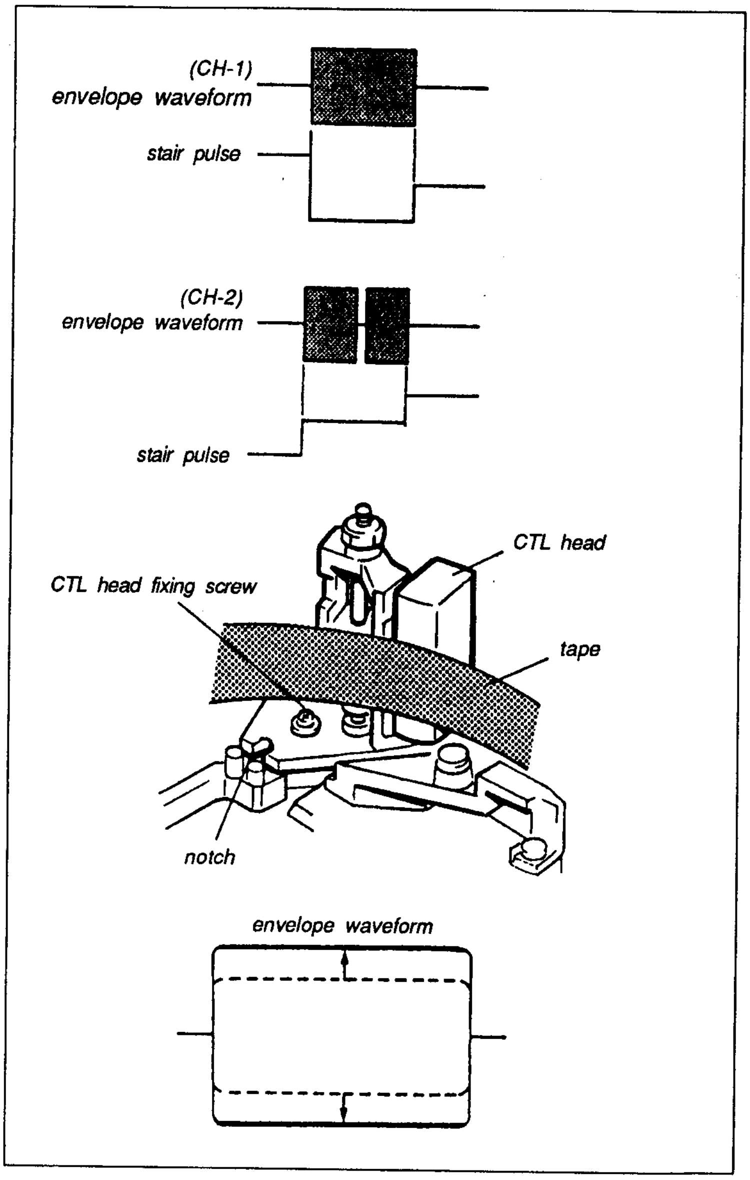
Mode: Play back the alignment tape.

Check procedure:

(1) Insert the alignment tape CR2-1B/1BPS and put the unit into the PLAY mode.
(2) When pushed the (+) or (–) button of the tracking control on the servo remote control tool, confirm that the RF envelope waveform is decreased. (Perform the adjustment if the output waveform is increased.)
(3) Confirm that the relationship between the switching pulse and RF envelope waveform meets the required specification.

Adjustment procedure:

(1) Remove the servo remote control tool.
(2) Loosen the fixing screw of CTL head by 1/2 turn.
(3) Insert a flatblade 3mm screwdriver into the notch of the CTL Head Mounting Bracket and adjust the CTL head position so that the RF envelope waveform is maximum.
(4) Tighten the CTL head fixing screw.
(5) Check according to the check procedure.



6-11. AUDIO HEAD ZENITH ADJUSTMENT

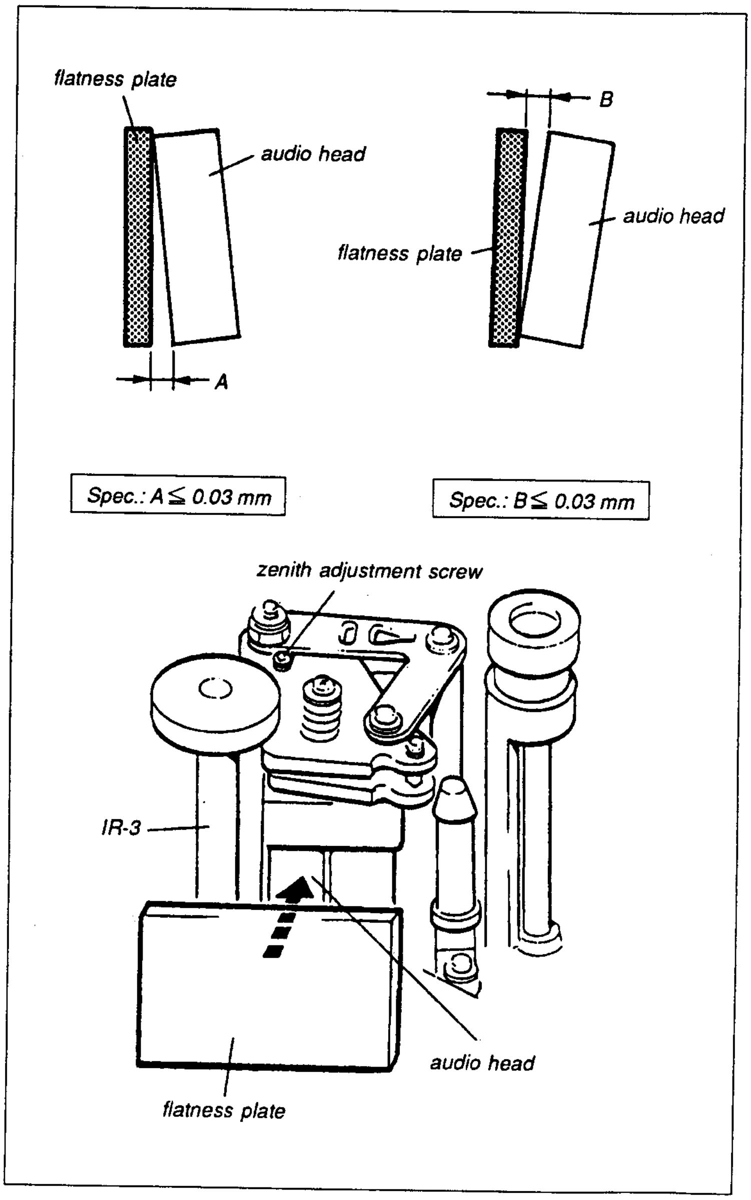
Tool: Flatness plate
Mode: EJECT mode

Check procedure:

(1) Put the flatness plate onto the IR-3 guide and audio head.
(2) When the flatness plate is pressed onto the IR-3 guide, confirm that the clearance between the flatness plate and audio head meets the required specification.

Adjustment procedure:

(1) Adjust the Zenith Adjustment Screw so that the specification is satisfied.
(2) Adjust as follows:
    Sec 6-14 Audio Head Phase Adjustment
    Sec 6-12 TC Head Position Adjustment
    Sec 6-13 Audio Head Height Adjustment
    Sec 6-12 TC Head Position Adjustment


flatness plate
audio head
A
B
flatness plate
audio head
Spec.: A ≤ 0.03 mm
Spec.: B ≤ 0.03 mm
zenith adjustment screw
IR-3
audio head
flatness plate

6-12. TC HEAD POSITION ADJUSTMENT

Tool: Alignment tape without a lid (CR2-1B/1BPS)
Extension Board

Setting: (1) Extend the SV-97A/P Board with an extension board.
(2) Connect the oscilloscope as follows:
CH-1: TP38 / Extension Board (CTL waveform)
CH-2: TP2 / TB-5 Board (TC waveform)
TRIG: TP20 / Extension Board (1/2 VD)

Mode: Play back the alignment tape.

Check procedure:

(1) Insert the alignment tape CR2-1B/1BPS and put the unit into the PLAY mode.

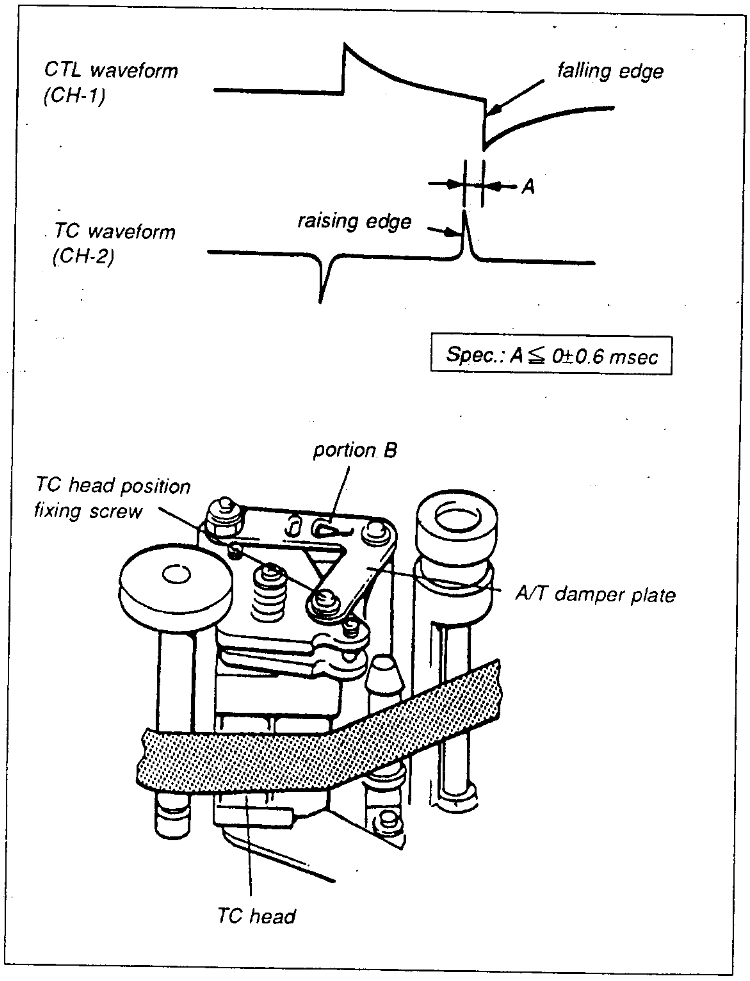
(2) Confirm that the relationship between the phase at the falling edge of the CTL waveform and that at the raising edge of the TC waveform meets the required specification.

Adjustment procedure:

(1) Loosen the TC Head Position Fixing Screw by one or two turns.

(2) Insert a flatblade 3mm screwdriver into portion B of the A/T Damper Plate and adjust the TC head position so that the required specification is satisfied.

(3) Tighten the TC Head Position Fixing Screw and recheck.


CTL waveform
(CH-1)
falling edge
A
raising edge
TC waveform
(CH-2)
Spec.: A ≦ 0±0.6 msec
portion B
TC head position
fixing screw
A/T damper plate
TC head

6-13. AUDIO HEAD HEIGHT ADJUSTMENT

Tool: Alignment tape without a lid (CR8-1A/1APS)
Extension Board

Setting: (1) Extend the AU-97/P Board with an extension board
(2) Connect the oscilloscope as follows:
CH-1: TP105 / AU-97/P Board
CH-2: TP205 / AU-97/P Board

Mode: Play back the alignment tape.

Check procedure:

(1) Play back a 1 kHz/0 dB audio signal on the alignment tape.

(2) Pushing up and pressing down the tape of the illustrated portion between the audio head and IR-3 Guide. Confirm that the output waveform is desereaed without increasing. (Perform the adjustment when the output waveform is increased.)

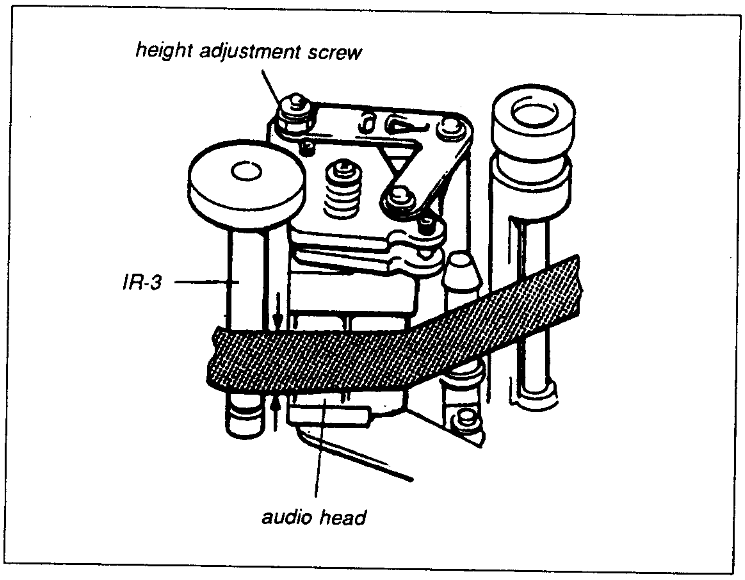
Adjustment procedure:

- When the output waveform is increased by pushing up the tape.

(1) Turn the Height Adjustment Screw clockwise so that the output waveform is maximum.

- When the output waveform is increased by pressing down the tape.

(2) Turn the Height Adjustment Screw counterclockwise so that the output waveform is maximum.



6-14. AUDIO HEAD PHASE ADJUSTMENT

Tool: Alignment tape without a lid (CR8-1A/1APS)
Extension Board

Setting:

(1) Extend the AU-97/P Board with an extension board.
(2) Connect the horizontal and vertical terminals of the oscilloscope to TP105 and TP205 on the AU-97/P Board.
(3) Play back a 1 kHz audio signal on the alignment tape.
(4) Adjust the oscilloscope for horizontal and vertical amplitudes to 6cm of a lissajous waveform.

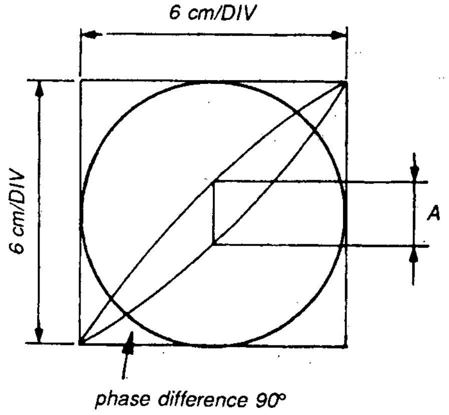
Mode: Play back the alignment tape.

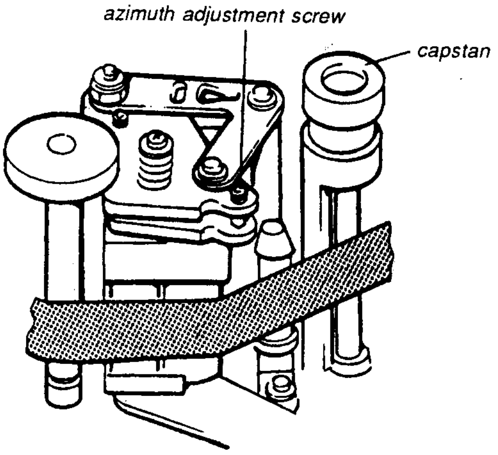
Check procedure:

(1) Play back a 1 kHz audio signal on the alignment tape.
(2) Confirm that the phase difference meets the required specification.
(3) Play back a 10 kHz/-10 dB audio signal on the alignment tape.
(4) Confirm that the phase difference meets the required specification.

Adjustment procedure:

(1) Play back 1 kHz and 10 kHz audio signals on the alignment tape.
(2) Adjust the Azimuth Adjustment Screw so that both specifications are satisfied.





Spec.: *1 kHz: A ≦ 0.52 cm (5°)*
10 kHz: A ≦ 0.52 cm (5°)

6-15. PB SWITCHING POSITION ADJUSTMENT

Tool: Alignment tape, CR2-1B/1BPS
Two extension boards

Setting:

(1) Set the S1/VP-24/P to the OFF position.

(2) Extend the SV-97A/P board with an extension board.

(3) Extend the VP-24/P board with an extension board.

(4) Connect the oscilloscope as follows:
CH-1: TP33/Extension board (VP-24/P)
CH-2: TP10/Extension board (SV-97A/P)
TRIG: TP20/Extension board (SV-97A/P)

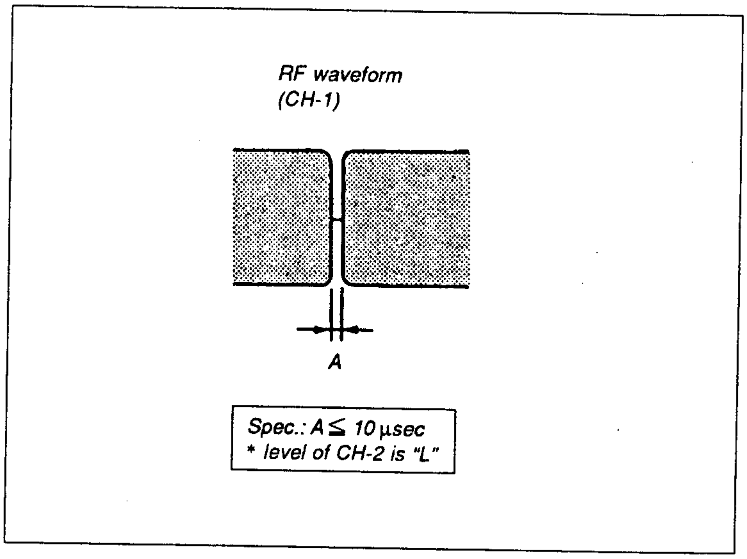
Mode: Play back the alignment tape.

Adjustment procedure:

(1) Adjust the RV4/SV-97A/P so that the portion A of the CH-1 waveform is minimized during the level of CH-2 is "L".

(2) Adjust the RV3/SV-97A/P so that the specification is satisfied. If the level of CH-2 is "H", perform step (1) again.

(3) After the adjustment is completed, set the S1/VP-24/P to the ON position.



Spec.: A ≤ 10 µsec
** level of CH-2 is "L"*

6-16. BRUSH ADJUSTMENT

6-16-1. Brush Position Adjustment

Mode: EJECT

Check procedure:

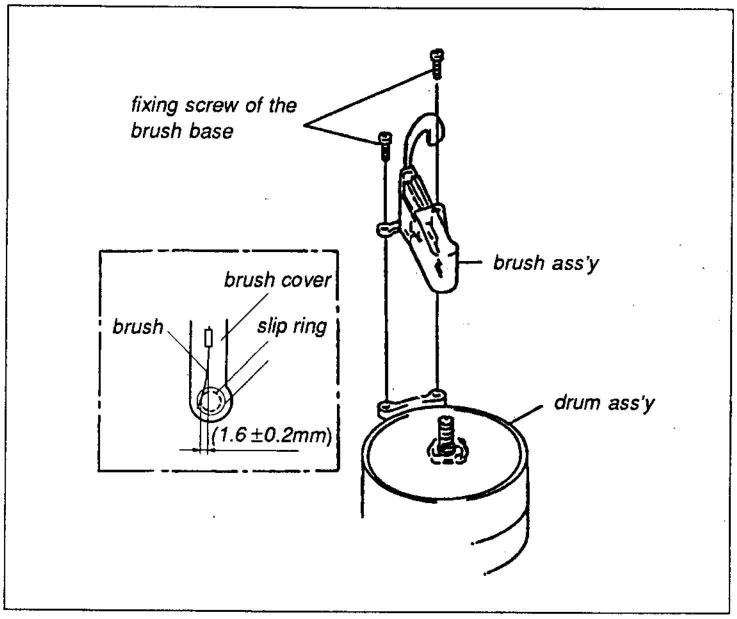
Confirm that the slip ring and the brush are in the following status when viewed from top.

(1) Make sure that the brush is positioned as shown in the illustration with reference to the slip ring.

(2) Make sure that the slip ring is placed at the center of moldline on the brush cover.

Adjustment procedure:

(1) Loosen the two fixing screws of the Brush Base, and adjust the position of the brush base so that the specification is satisfied.



6-16-2. Brush Height Adjustment

Mode: EJECT

Check procedure:

(1) Confirm that the Brush is parallel to the Slip Ring Groove.

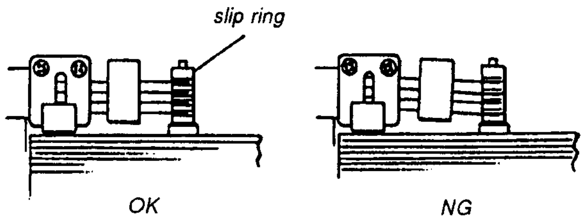
Adjustment procedure:

(1) Remove the Brush Base from the unit as described in Sec. 6-16-1. Brush Position Adjustment.

(2) Remove the Brush Cover from the Brush Base.

(3) Install the Brush Base on the unit, and loosen the two fixing screws of the Brush Base and adjust so that the specification is satisfied.

(4) After adjustment, install the Brush Cover and adjust the brush position as described in Sec. 6-16-1.

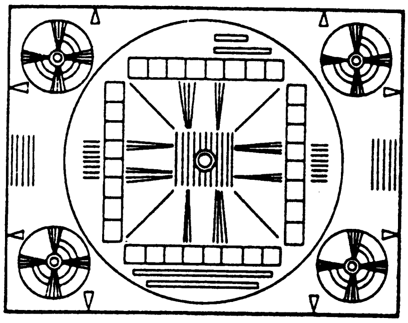


SECTION 7
CAMERA SYSTEM ALIGNMENT

7-1. PREPARATION

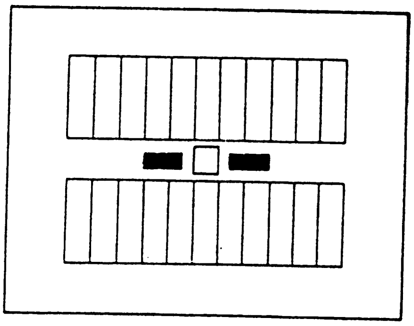
7-1-1. Tools and Measuring Instruments

J-6026-100-A	Resolution Chart



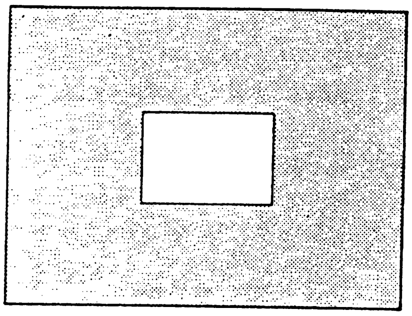
J-6026-130-B	Gray Scale Chart

Stick the velvet (black) at the both sides of white pattern in the center so as to avoid the light leakage.

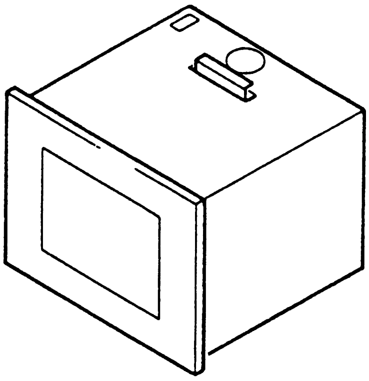


White Window Chart

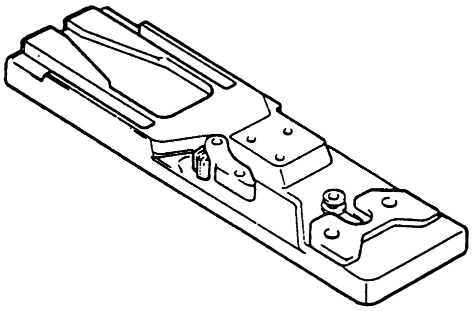
Make a hole in the center of black paper as shown in the figure.



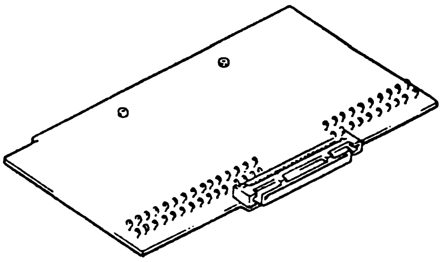
J-6029-140-B	Pattern Box PTB-500 (90 to 240Vac)



Standard Products	Tripod Adaptor



A-7520-314-A	Extension Board (EX-148)

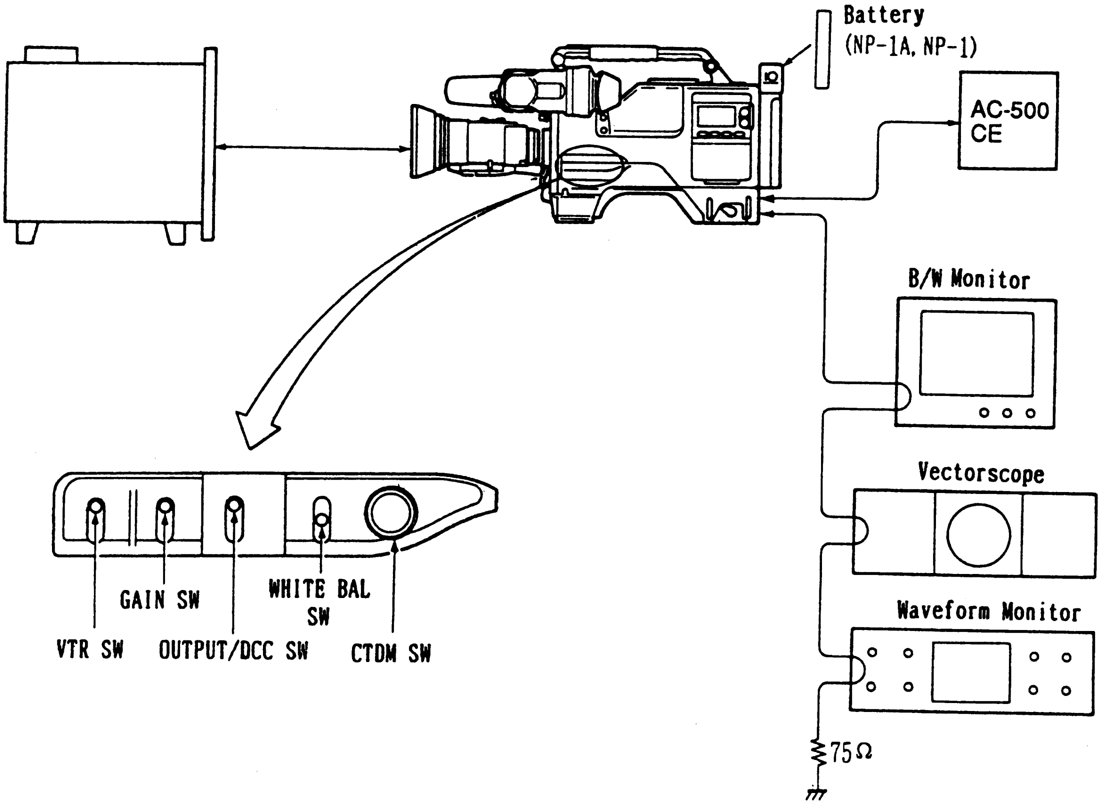


- AC Adaptor (Sony AC-500/500CE) or Battery (NP-1A, NP-1)

【Measuring Instruments】

- Oscilloscope
- Waveform Monitor
- Vectorscope
- Frequency Counter
- Digital Voltmeter
- B/W Monitor (H. Resolution: more than 700 TV lines)
- Color Motor
- CF Pulse Generator

7-1-2. Connection and Initial Setting



- VBS signal output is available from VIDEO OUT 1 connector or VIDEO OUT 2 connector. When connected with the VA-500CE playback adaptor (option) or with the BKP-402 (option) connected by the 26-pin cable to the external VTR, VBS output is available from VIDEO OUT1 on the side panel.
- VBS signal output to the connector of playback adaptor, output signal from VIDEO OUT 2 on the rear panel and output sigual from 26-pin connector on the BKW-402 are same signal. When connected with the playback adaptor and terminated by 75Ω, never terminate with 75Ω at VIDEO OUT 2 connector, it not correct level VBS signal cannot obtain.

1. Before adjustments, set the POWER switch to ON position, the VTR switch to the SAVE position and warm up for 10 minutes.
2. Reset the compensation data in the microcomputer. (Refer to Sec. 7-1-3.)
3. Set the switches and controls of the unit s follows.

[Side Panel]
POWER switch : ON
VTR switch : SAVE
GAIN switch : 0
OUTPUT/DCC switch : CAM/OFF
WHITE BAL switch : PRST
FILTER selector : 1 (3200K)
IRIS AUTO/MANU selector : MANU
IRIS control : CLOSE

[IE-30P Board]
S1 (DTL ON/OFF) : OFF

7-1-3. Precautions on Adjustments

- Boards Extension
  When the boards are extended, be sure to turn the POWER switch to OFF position.

- Procedure of Resetting Compensation Data
  Before 7-4-10. Black Set Pedestal Adjustment and 7-4-11. Flare Adjustment are carried out, the compensation data in the microcomputer must be reset in following order.

1. S2 (MEMORY RESET)/ AT-49B board → RESET
2. The compensation data is reset and "MEMORY RESET" is displayed on the Viewfinder Monitor for 5 minutes.
3. S2 (MEMORY RESET) / AT-49B board → OPERATE

(NOTE) When the AUTO W/B BAL switch is not set to BLK or WHT, the compensation data remains cleared (initial condition).
When the S2 (MEMORY RESET) / AT-49B board is set to RESET, the compensation data is reset whenever to POWER switch is set to OFF. Set the S2 to RESET during adjustment.

- Partial Adjustment
  Overall adjustment is described in Sec. 7-2. Camera Block Power Supply Alignment to Sec. 7-6. Auto Control System Adjustment.

  When performing part adjustment, refer to Sec. 7-8. Partial Adjustment.

- Earthing Point
  Use the GND terminal (TP1, TP2) on the extension board, unless otherwise specified.
  When the SY-117CP board is extended by the extension board, use the TP1 as GND terminal TP1 is colored with silver, and TP2 is gold.

7-2. CAMERA BLOCK POWER SUPPLY ADJUSTMENT

- The adjustment is not necessary if error is within ±3% of rated voltage.
- When performing this adjustment, be sure to readjust all of the following (to Sec. 7-7. Viewfinder System Adjustment).

7-2-1. +8.5V Adjustment and Each Voltage Check

- Setting

Equipment: Digital Voltmeter	Board: SG-152AP board

- Preparation

• To be extended; SG-152AP board

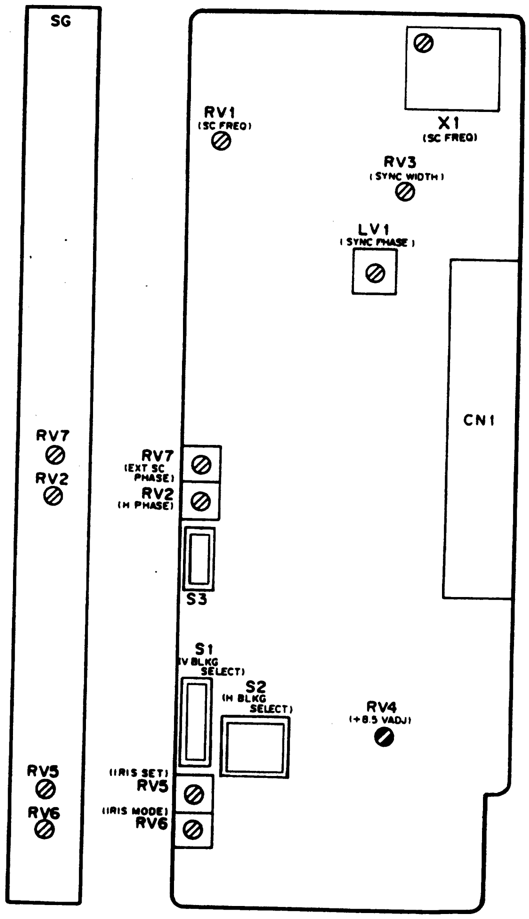
- Adjustment procedures

1. • Test point : TP3(GND:TP1)/Extension board
   • Adj. point : ⊘ RV4 (+8.5V ADJ)/SG-152AP
   • Spec. : +8.5 ± 0.1Vdc

2. • Test point : TP47 (GND:TP1)/Extension board
   • Spec. : +4.6 ± 0.1Vdc
   (Confirm)

3. • Test point : TP49 (GND:TP1)/Extension board
   • Spec. : –4.5 ± 0.1Vdc
   (Confirm)

4. • Test point : TP5 (GND:TP1)/Extension board
   • Spec. : +4.7 ± 0.1Vdc
   (Confirm)


SG
RV7
RV2
RV5
RV6
RV1
(SC FREQ)
X1
(SC FREQ)
RV3
(SYNC WIDTH)
LV1
(SYNC PHASE)
CN1
RV7
(EXT SC PHASE)
RV2
(H PHASE)
S3
S1
(V BLKG SELECT)
S2
(H BLKG SELECT)
RV4
(+8.5 VADJ)
(IRIS SET)
RV5
(IRIS MODE)
RV6

SG-152/AP BOARD (PANEL SIDE) SG-152/AP BOARD (COMPONENT SIDE)

7-3. SYNCHRONIZING SIGNAL SYSTEM ADJUSTMENT

- Before adjustment, set the POWER switch to ON position and warm up for 10 minutes.
- Make sure that the no signal is put into the TC LOCK VIDEO IN terminal.

7-3-1. Subcarrier Frequency Adjustment

- Setting

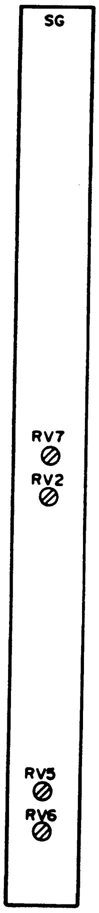
Equipment: Frequency Counter	Board: SG-152AP board

- Preparation

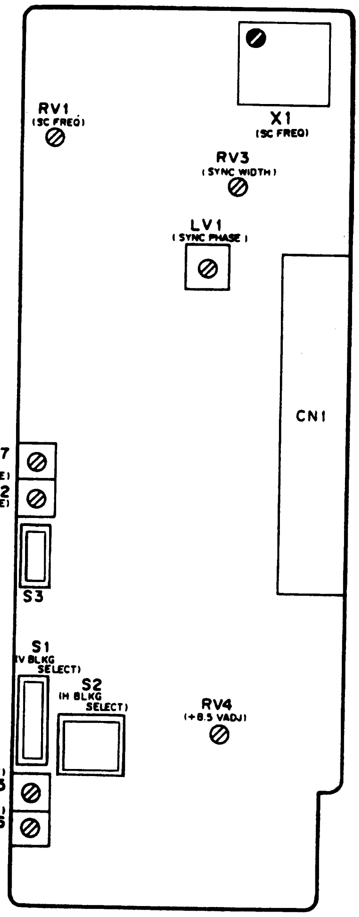
- To be extended; SG-152AP board
- Connect the inductor more than 100μH in series to between the probe of Counter and Test Point.

- Adjustment procedures

1. • Test point : TP21(GND:TP22)
   /Extension board
   - Adj. point : ⊘ X1(SC FREQ)/SG-152AP
   - Spec. : 4,433,619 ±5 Hz


SG
RV7
RV2
RV5
RV6

SG-152/AP BOARD
(PANEL SIDE)


X1
(SC FREQ)
RV1
(SC FREQ)
RV3
(SYNC WIDTH)
LV1
(SYNC PHASE)
CN1
RV7
(EXT SC PHASE)
RV2
(H PHASE)
S3
S1
(V BLKG SELECT)
S2
(H BLKG SELECT)
RV4
(+8.5 VADJ)
(IRIS SET)
RV5
(IRIS MODE)
RV6

SG-152/AP BOARD (COMPONENT SIDE)

7-3-2. SYNC Width Adjustment

- **Setting**

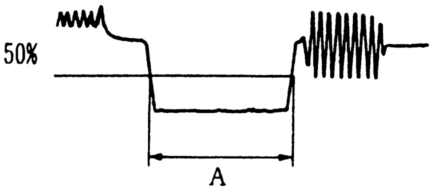
Equipment: Waveform Monitor	Board: SG-152AP board

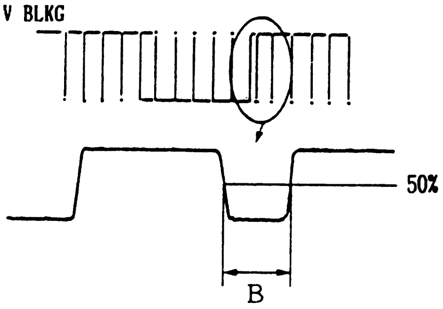
- **Preparation**

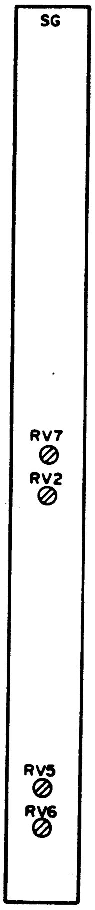
- To be extended; SG-152AP board
- S3 (Y/G SELECT) / EN-79P : ENC

- **Adjustment procedures**

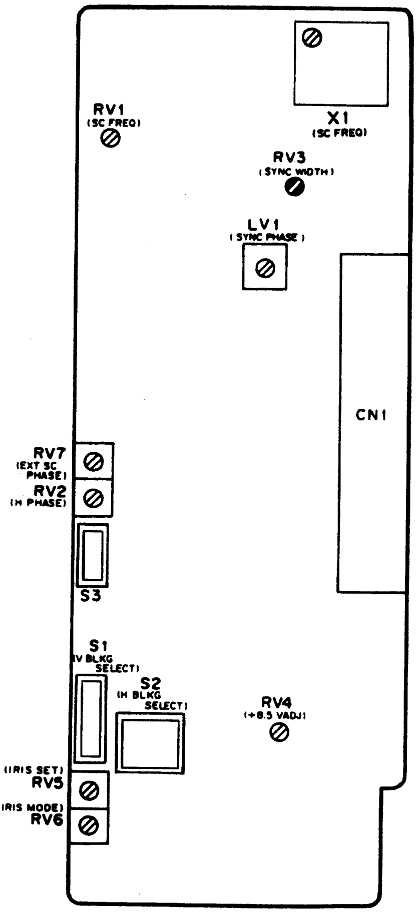
- Test point : Waveform Monitor
- Adj. point : ⊘ RV3(SYNC WIDTH)/SG-152AP
- Spec. : 1. SYNC width A = 4.7 ± 0.1μs
  2. Confirm that the equalizing pulse width B is 2.3 ± 0.1μs.






SG
RV7
RV2
RV5
RV6

SG-152/AP BOARD
(PANEL SIDE)


RV1
(SC FREQ)
X1
(SC FREQ)
RV3
(SYNC WIDTH)
LV1
(SYNC PHASE)
CN1
RV7
(EXT SC PHASE)
RV2
(H PHASE)
S3
S1
(V BLKG SELECT)
S2
(H BLKG SELECT)
RV4
(+8.5 VADJ)
(IRIS SET)
RV5
(IRIS MODE)
RV6

SG-152/AP BOARD (COMPONENT SIDE)

7-3-3. SYNC Phase Adjustment

- Setting

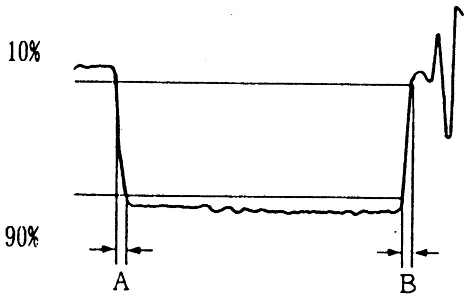
Equipment: Waveform Monitor	Board: SG-152AP board

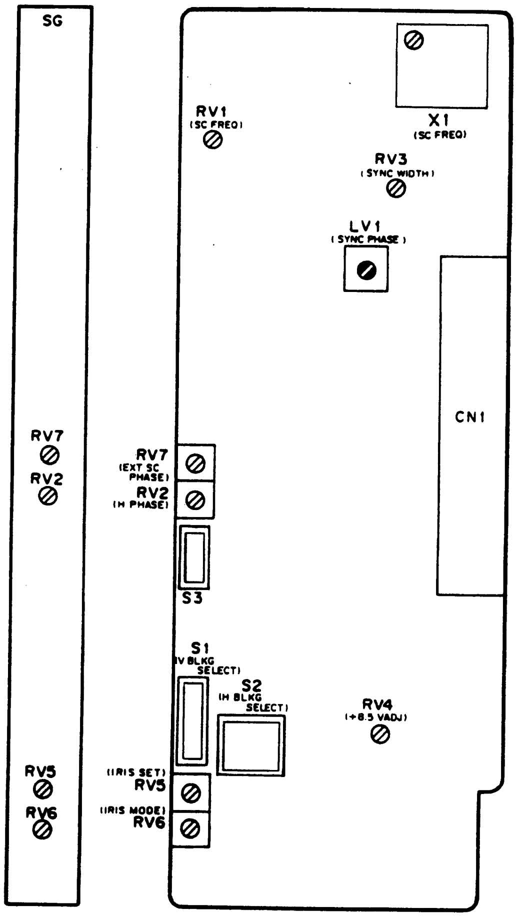
- Preparation

- To be extended; SG-152AP board
- Confirm that S3 (Y/G SELECT) / EN-79P is set to ENC.

- Adjustment procedures

- Test point : Waveform Monitor
- Adj. point : ● LV1(SYNC PHASE)
- Spec. : $A = B = 0.25 \pm 0.02\mu s$




SG
RV7
RV2
RV5
RV6
RV1 (SC FREQ)
X1 (SC FREQ)
RV3 (SYNC WIDTH)
LV1 (SYNC PHASE)
CN1
RV7 (EXT SC PHASE)
RV2 (H PHASE)
S3
S1 (V BLKG SELECT)
S2 (H BLKG SELECT)
RV4 (+8.5 VADJ)
(IRIS SET) RV5
(IRIS MODE) RV6

SG-152/AP BOARD (PANEL SIDE) SG-152/AP BOARD (COMPONENT SIDE)

7-3-4. Burst Flag Adjustment

- Setting

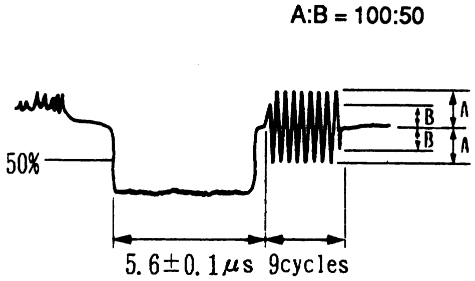
Equipment: Waveform Monitor	Board: EN-79P board

- Preparation

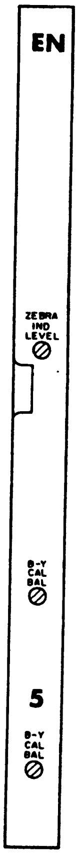
- To be extended; EN-79P board
- Confirm that S3 (Y/G SELECT) / EN-79P is set to ENC.

- Adjustment procedures

- Test point : Waveform Monitor
- Adj. point : ⊘ RV13(BURST START) /EN-79P
- Spec. : 5.6 ± 0.1μs

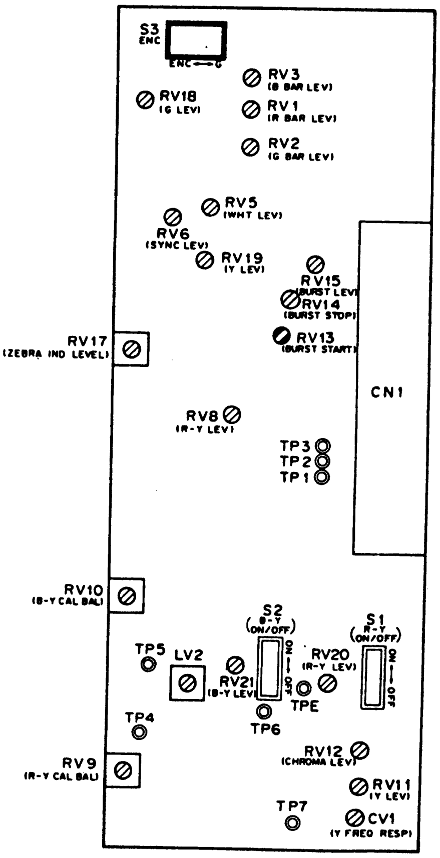


A:B = 100:50
50%
B
B
A
A
5.6±0.1μs
9cycles



EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD
(PANEL SIDE)



S3 ENC
ENC ⟷ G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV13 (BURST START)
RV17 (ZEBRA IND LEVEL)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5
LV2
RV21 (B-Y LEV)
RV20 (R-Y LEV)
ON
OFF
TPE
TP4
TP6
RV9 (R-Y CAL BAL)
RV12 (CHROMA LEV)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

7-3-5. H BLKG Adjustment

- Setting

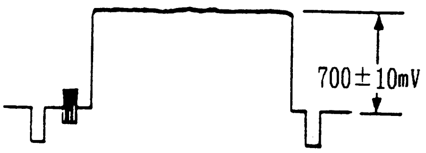
Equipment: Waveform Monitor	Board: SG-152AP board

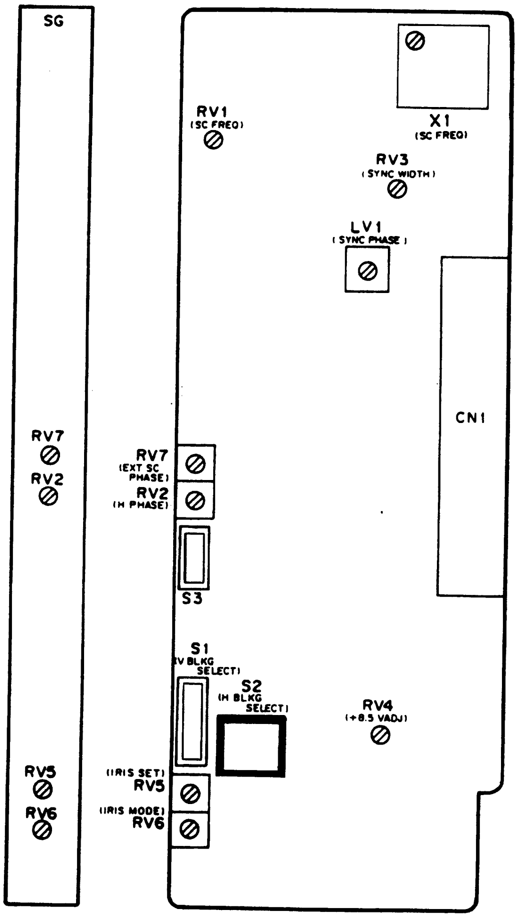
- Preparation

- To be extended; SG-152AP board
- Confirm that S3 (Y/G SELECT) / EN-79P is set to ENC.
- AUTO/MANU switch Pattern Box : AUTO
- Set the zoom control to TELE and shoot the white area of the white window chart.

- Adjustment procedures

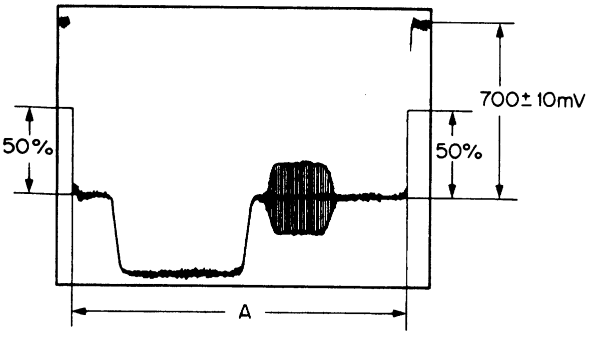
1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV




SG
RV7
RV2
RV5
RV6
RV1
(SC FREQ)
X1
(SC FREQ)
RV3
(SYNC WIDTH)
LV1
(SYNC PHASE)
CN1
RV7
(EXT SC PHASE)
RV2
(H PHASE)
S3
S1
(V BLKG SELECT)
S2
(H BLKG SELECT)
RV4
(+8.5 VADJ)
(IRIS SET)
RV5
(IRIS MODE)
RV6

SG-152/AP BOARD (PANEL SIDE) SG-152/AP BOARD (COMPONENT SIDE)

2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘ S2 (H BLKG SELECT) /SG-152AP
   • Spec. : A = 12.05 ± 0.25μs


700± 10mV
50%
50%
A

7-3-6. INT SC Phase Adjustment

- Note

> - The procedure stated below applies to the adjustments where the Tektronix 1751 is used.
> - If any other measuring instrument is used, observe the instructions given in the operation manual attached to it.

- Setting

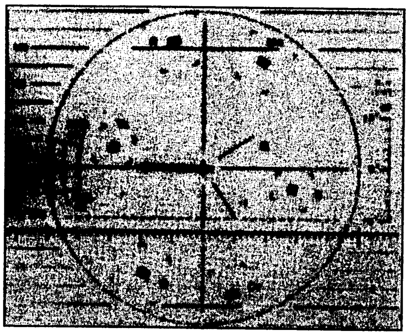
Equipment: SC-H Phase Measuring instrument	Board: SG-152AP board

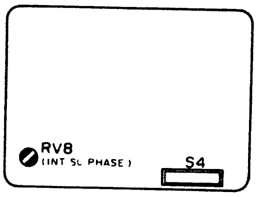
- Preparation

> - Disconnect the vectorscope, and connect the Tektronix 1751 instead.
> - Put the Tektronix 1751 into the SC-H mode.

- Adjustment procedures

- Test point : VIDEO OUT TERMINAL
- Adj. point : ⊘ RV8 (INT SC PHASE)/SG-157P
- Spec. : Position the luminous line of the burst (SC) and the luminescent spot of H properly.





SG-157P BOARD (SOLDERING SIDE)

7-4. VIDEO SIGNAL SYSTEM ADJUSTMENT

7-4-1. DC Balance Pre-adjustment

•Setting

Equipment: Dualtrace Oscilloscope	Board: VA-104 board

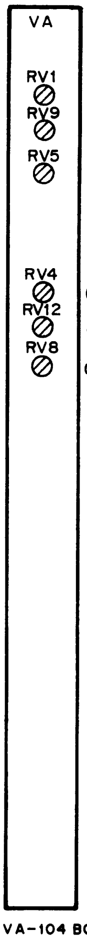
• Preparation

- To be extended; VA-104 board
- ⊘ RV1 (R GAIN), ⊘ RV5 (G GAIN), ⊘ RV9 (B GAIN) / VA-104 : mechanical center

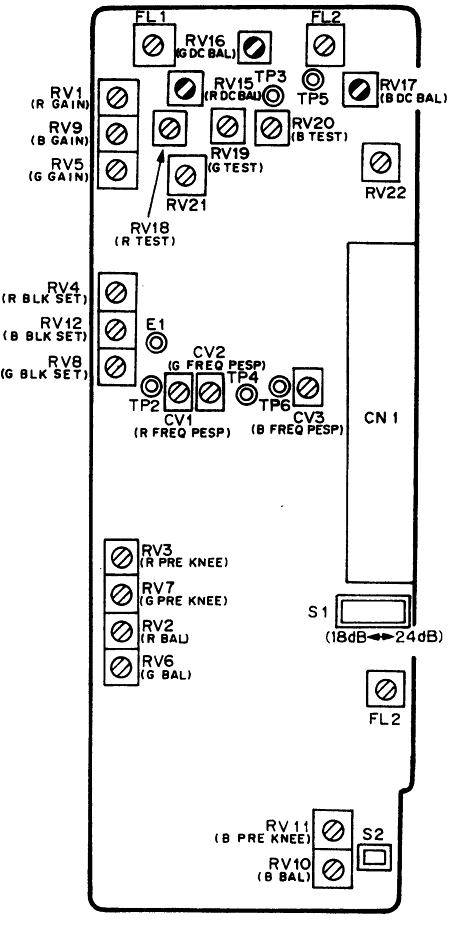
• Adjustment procedures

- TRIG: HD (TP18/Extension board)

	Test point VA-104 board	Adj. point VA-104 board	Specification
G-ch	TP3 (GND : E1)	⊘ RV16 (G DC BAL)	−1.9 ± 0.1 Vdc
R-ch	TP1 (GND : E1)	⊘ RV15 (R DC BAL)	−1.9 ± 0.1 Vdc
B-ch	TP5 (GND : E1)	⊘ RV17 (B DC BAL)	−1.9 ± 0.1 Vdc


VA
RV1
RV9
RV5
RV4
RV12
RV8

VA-104 BOARD
(PANEL SIDE)


FL1
FL2
RV16 (G DC BAL)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(18dB◄►24dB)
FL2
RV 11 (B PRE KNEE)
RV10 (B BAL)
S2

VA-104 BOARD (COMPONENT SIDE)

• **Note**

- After adjustment is completed, be sure to perform 7-4-1(a). R/B Black Offset Adjustment.

7-4-1 (a). R/B Black Offset Adjustment

- Setting

Equipment: Oscilloscope	Board: VA-104 board

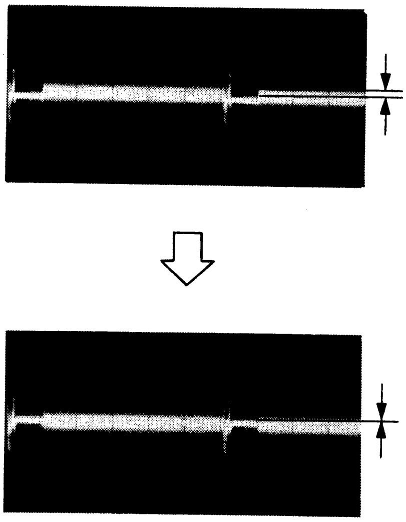
- Preparation

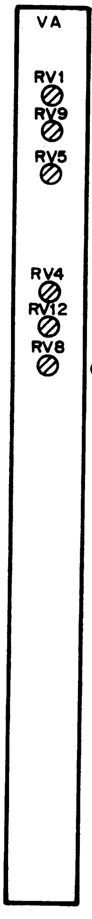
• Lens iris	→	Close "C"
• OUTPUT/DCC Switch (side panel)	→	"CAM/OFF"
• S2 TEST/VA-104 board	→	"OFF"

- Adjustment procedures

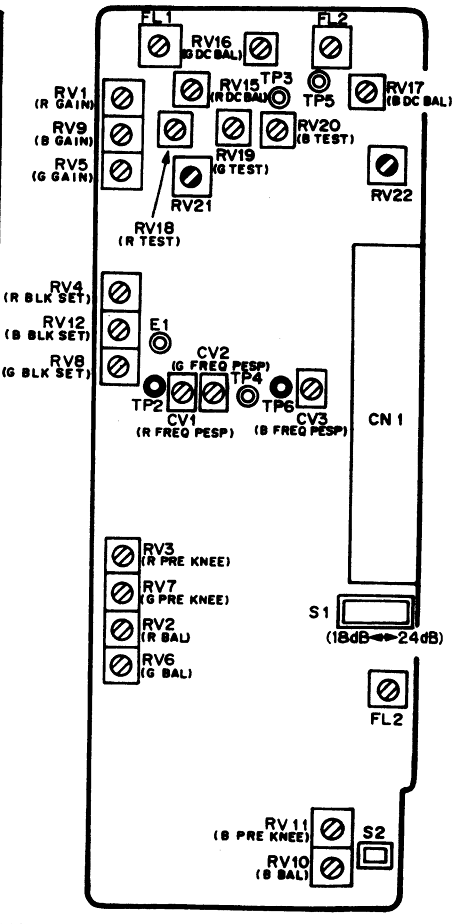
• TRIG: HD (TP18/Extension board)
Adjust every channel as shown below.

	Test point/VA-104 board	Adj. point/VA-104 board
R-ch	TP2	⊘ RV21
B-ch	TP6	⊘ RV22




VA
RV1
RV9
RV5
RV4
RV12
RV8

VA-104 BOARD
(PANEL SIDE)


FL1
RV16
(G DC BAL)
FL2
RV1
(R GAIN)
RV15
(R DC BAL)
TP3
TP5
RV17
(B DC BAL)
RV9
(B GAIN)
RV20
(B TEST)
RV19
(G TEST)
RV5
(G GAIN)
RV21
RV22
RV18
(R TEST)
RV4
(R BLK SET)
RV12
(B BLK SET)
E1
CV2
(G FREQ RESP)
RV8
(G BLK SET)
TP4
TP2
TP6
CV1
(R FREQ RESP)
CV3
(B FREQ RESP)
CN 1
RV3
(R PRE KNEE)
RV7
(G PRE KNEE)
RV2
(R BAL)
RV6
(G BAL)
S1
(18dB◄►24dB)
FL2
RV11
(B PRE KNEE)
S2
RV10
(B BAL)

VA-104 BOARD (COMPONENT SIDE)

- Note

• After adjustment is completed, be sure to perform 7-4-1(b). VA Gain Pre-adjustment.

7-4-1(b). VA Gain Pre-Adjustment

- Note

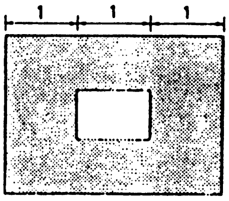
- This adjustment should be performed after 7-4-1. DC Balance Adjustment is completed.
- Use a white pattern chart for this adjustment.
  Adjust the lighting so that the white area is exactly 3200K of color temperature.
- When the pattern box is used, well maintained pattern box should be used.

- Setting

Equipment: Dualtrace Oscilloscope	Board: VA-104 board

- Preparation

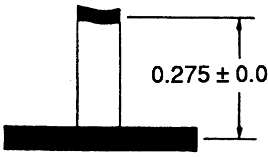
- To be extended; VA-104 board
- Adjust the iris control and shoot the chart as shown below.
- Gain Selector: 0

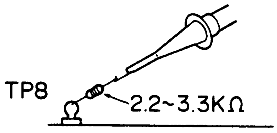


Monitor Screen

- Adjustment procedures

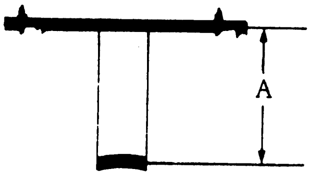
1. • Test point : TP8 (GND:TP9)
   /Extension board
   • Adj. point : Iris control
   • Spec. : 0.275 ± 0.03V



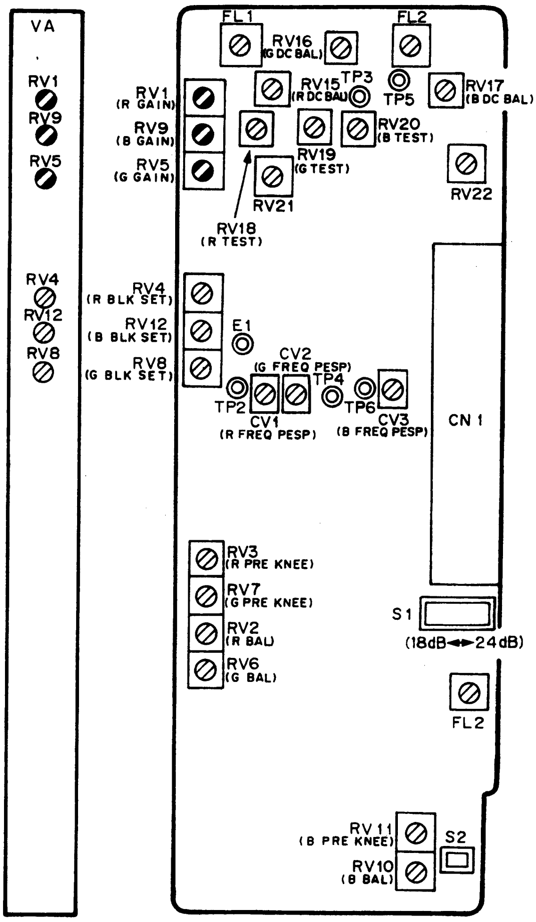


Note: When measuring the TP8, connect the resistance (2.2~3.3 kΩ) between the probe and the TP8 connector.

2. • Test point : G Gain : TP39/Extension board
   R Gain : TP41/Extension board
   B Gain : TP43/Extension board
   • Adj. point : ⊘ RV5 (G GAIN)/VA-104
   ⊘ RV1 (R GAIN)/VA-104
   ⊘ RV9 (B GAIN)/VA-104
   • Spec. : A = 0.50 ± 0.01V



TRIG: HD (TP18/Extension board)


VA
RV1
RV9
RV5
RV4
RV12
RV8
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
FL1
FL2
RV16 (G DC BAL)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV18 (R TEST)
RV22
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(18dB◄►24dB)
FL2
RV11 (B PRE KNEE)
RV10 (B BAL)
S2

VA-104 BOARD (PANEL SIDE) VA-104 BOARD (COMPONENT SIDE)

7-4-1(c). DC Balance Adjustment

•Setting

Equipment: Dualtrace Oscilloscope	Board: VA-104 board

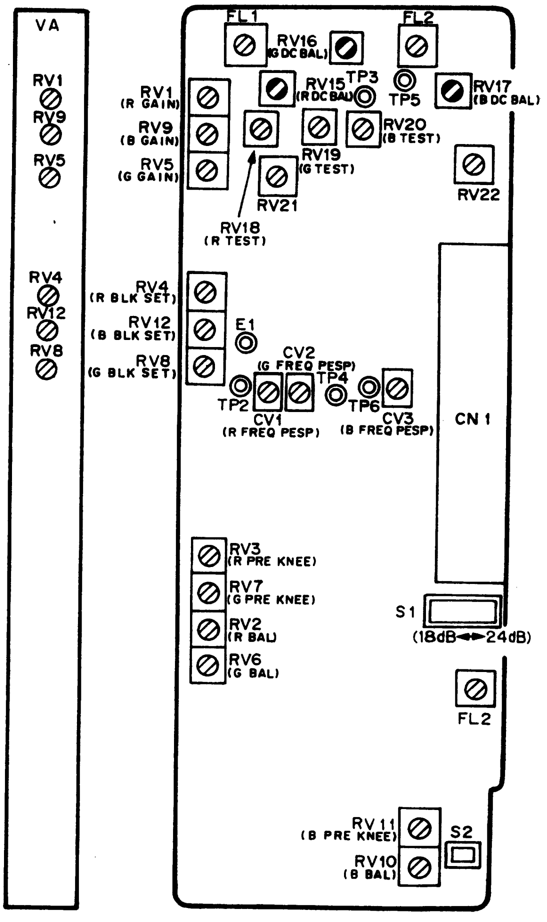
• Preparation

- To be extended; VA-104 board

• Adjustment procedures

- TRIG: HD (TP18/Extension board)

	Test point VA-104 board	Adj. point VA-104 board	Specification
G-ch	TP3 (GND : E1)	⊘ RV16 (G DC BAL)	−1.9 ± 0.1 Vdc
R-ch	TP1 (GND : E1)	⊘ RV15 (R DC BAL)	−1.9 ± 0.1 Vdc
B-ch	TP5 (GND : E1)	⊘ RV17 (B DC BAL)	−1.9 ± 0.1 Vdc


VA
RV1
RV9
RV5
RV4
RV12
RV8
FL1
RV16 (G DC BAL)
FL2
RV1 (R GAIN)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV9 (B GAIN)
RV20 (B TEST)
RV5 (G GAIN)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
E1
RV8 (G BLK SET)
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
S1
RV2 (R BAL)
(18dB↔24dB)
RV6 (G BAL)
FL2
RV 11 (B PRE KNEE)
S2
RV10 (B BAL)

VA-104 BOARD (PANEL SIDE) VA-104 BOARD (COMPONENT SIDE)

7-4-2. VA Gain Adjustment

- Note

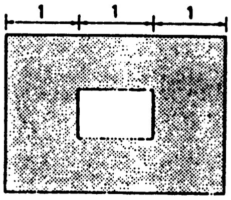
- This adjustment should be performed after 7-4-1(c). DC Balance Adjustment is completed.
- Use a white pattern chart for this adjustment.
  Adjust the lighting so that the white area is exactly 3200K of color temperature.
- When the pattern box is used, well maintained pattern box should be used.

- Setting

Equipment: Dualtrace Oscilloscope	Board: VA-104 board

- Preparation

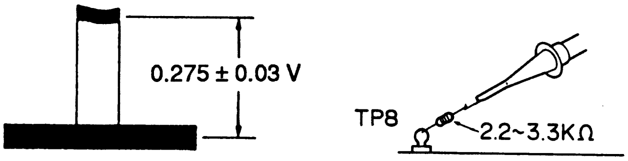
- To be extended; VA-104 board
- Adjust the iris control and shoot the chart as shown below.
- Gain Selector: 0



Monitor Screen

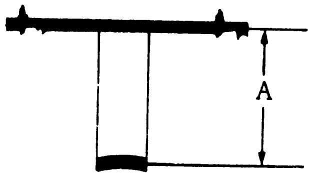
- Adjustment procedures

1. • Test point : TP8 (GND:TP9)
   /Extension board
   • Adj. point : Iris control
   • Spec. : 0.275 ± 0.03V

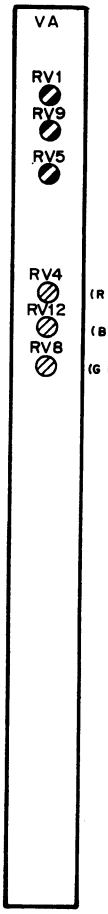

0.275 ± 0.03 V
TP8
2.2~3.3KΩ

Note: When measuring the TP8, connect the resistance (2.2~3.3 kΩ) between the probe and the TP8 connector.

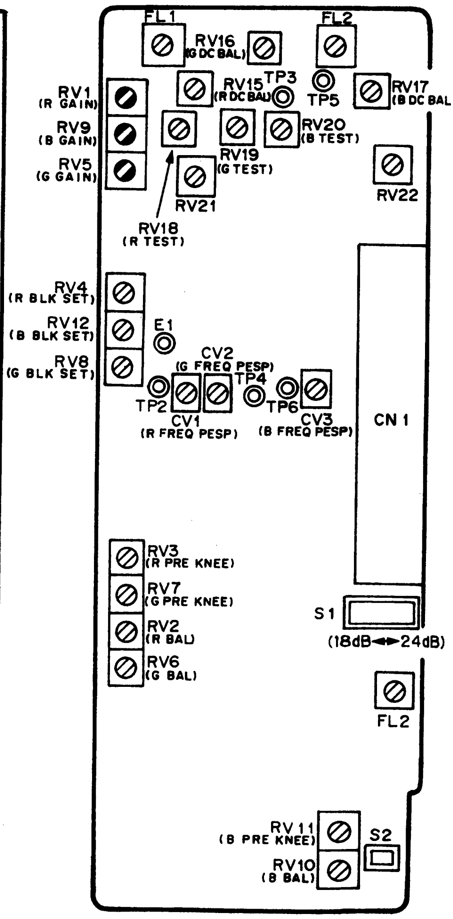
2. • Test point : G Gain : TP39/Extension board
   R Gain : TP41/Extension board
   B Gain : TP43/Extension board
   • Adj. point : ● RV5 (G GAIN)/VA-104
   ● RV1 (R GAIN)/VA-104
   ● RV9 (B GAIN)/VA-104
   • Spec. : A = 0.50 ± 0.01V



TRIG: HD (TP18/Extension board)


VA
RV1
RV9
RV5
RV4
RV12
RV8

VA-104 BOARD
(PANEL SIDE)


FL1
RV16 (G DC BAL)
FL2
RV1 (R GAIN)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV9 (B GAIN)
RV20 (B TEST)
RV5 (G GAIN)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
E1
RV8 (G BLK SET)
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
S1
RV2 (R BAL)
(18dB◄►24dB)
RV6 (G BAL)
FL2
RV 11 (B PRE KNEE)
S2
RV10 (B BAL)

VA-104 BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, check that the values of 7-4-1(c) DC Balance Adjustment are not changed.
  When the values are changed make this adjustment after readjusting the VA Gain.

7-4-3. Test Signal Waveform Adjustment

- Note

• This adjustment should be performed after 7-4-2. VA Gain Adjustment is completed.

- Setting

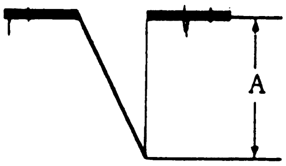
Equipment: Dualtrace Oscilloscope	Board: VA-104 board

- Preparation

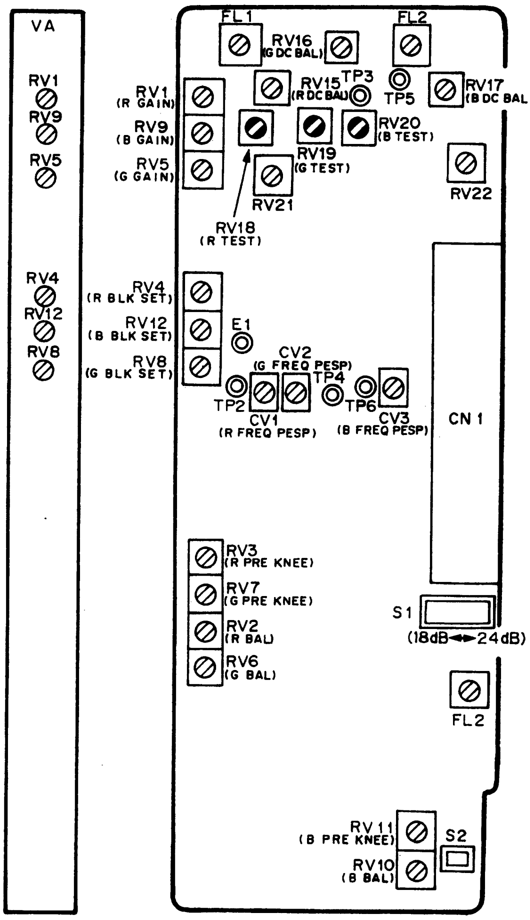
• To be extended; VA-104 board • S3 (TEST SAW) / SG-152AP : ON

- Adjustment procedures

- Test point : G TEST
  TP39/Extension board
  R TEST
  TP41/Extension board
  B TEST
  TP43/Extension board
- Adj. point : ⊘ RV19 (G TEST)/VA-104
  ⊘ RV18 (R TEST)/VA-104
  ⊘ RV20 (B TEST)/VA-104
- Spec. : A = 0.50 ± 0.01V



TRIG: HD (TP18/Extension board)


VA
RV1
RV9
RV5
RV4
RV12
RV8
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
FL1
RV16 (G DC BAL)
FL2
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(18dB◄►24dB)
FL2
RV11 (B PRE KNEE)
RV10 (B BAL)
S2

VA-104 BOARD (PANEL SIDE)

VA-104 BOARD (COMPONENT SIDE)

- Note

• After adjustment is completed, set the S3 to OFF.

7-4-4. Pre Knee Adjustment

- Setting

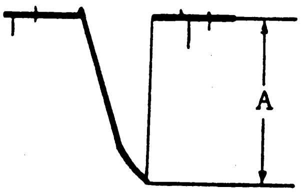
Equipment: Dualtrace Oscilloscope	Board: VA-104 board

- Preparation

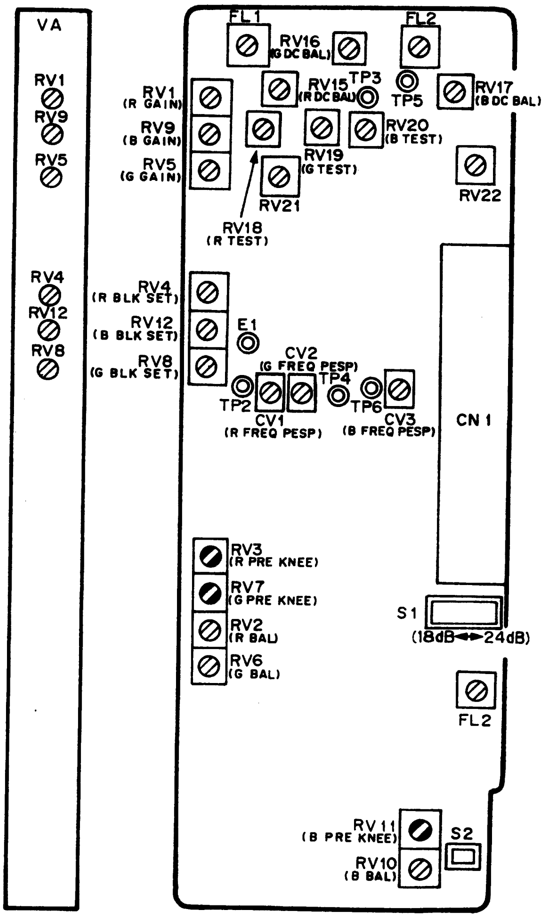
- To be extended; VA-104 board
- Confirm that S1(GAIN SELECT) / VA-104 is set to +18dB.
- S3 (TEST SAW) / SG-152AP: ON
- GAIN selector: 18

- Adjustment procedures

- Test point : G PRE KNEE
  TP39/Extension board
  R PRE KNEE
  TP41/Extension board
  B PRE KNEE
  TP43/Extension board
- Adj. point : ⊘ RV7 (G PRE KNEE)/VA-104
  ⊘ RV3 (R PRE KNEE)/VA-104
  ⊘ RV11 (B PRE KNEE)/VA-104
- Spec. : A = 1.65 ± 0.02V



TRIG: HD (TP18/Extension board)


VA
RV1
RV9
RV5
RV4
RV12
RV8
FL1
RV16 (G DC BAL)
FL2
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(18dB↔24dB)
FL2
RV11 (B PRE KNEE)
S2
RV10 (B BAL)

VA-104 BOARD (PANEL SIDE)

VA-104 BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, set the S3 to OFF, GAIN selector to 0.

7-4-5. Modulator Balance Adjustment

- Setting

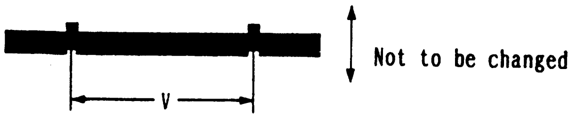
Equipment: Dualtrace Oscilloscope	Board: VA-104 board

- Preparation

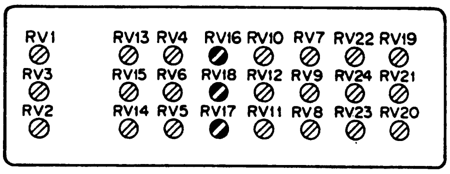
> - To be extended; VA-104 board
> - Set the iris control to CLOSE.

- Adjustment procedures

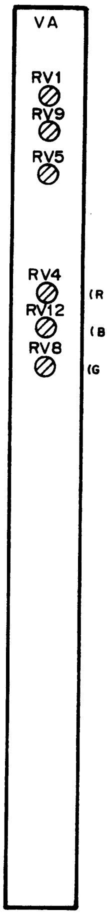
- Test point : G Balance
  TP39/Extension board
  R Balance
  TP41/Extension board
  B Balance
  TP43/Extension board
- Adj. point : ● RV6 (G BAL)/VA-104
  ● RV17(G-V MOD SAW) /VA-104, IC15
  ● RV2 (R BAL)/VA-104
  ● RV16(R-V MOD SAW) /VA-104, IC15
  ● RV10 (B BAL)/VA-104
  ● RV18(B-V MOD SAW) /VA-104, IC15
- Spec. : Adjust the volumes so that the waveform does not change even if the volume is turned both clockwise and counter-clockwise.


Not to be changed
V

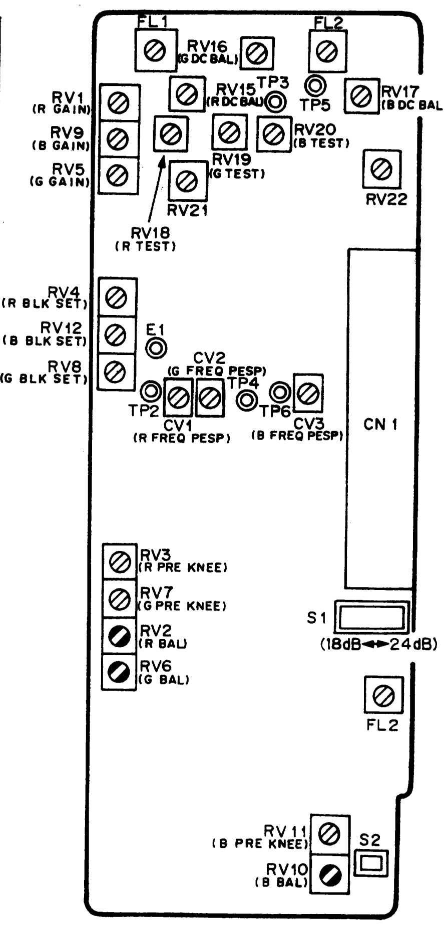
TRIG: HD (TP17/Extension board)


RV1
RV13
RV4
RV16
RV10
RV7
RV22
RV19
RV3
RV15
RV6
RV18
RV12
RV9
RV24
RV21
RV2
RV14
RV5
RV17
RV11
RV8
RV23
RV20

HIC (IC15)
(COMPONENT SIDE) -On the VA-104 Board-


VA
RV1
RV9
RV5
RV4
RV12
RV8

VA-104 BOARD
(PANEL SIDE)


FL1
FL2
RV16 (G DC BAL)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(18dB◄►24dB)
FL2
RV11 (B PRE KNEE)
RV10 (B BAL)
S2

VA-104 BOARD (COMPONENT SIDE)

- Note

> - After adjustment is completed, be sure to perform 7-4-9. White Shading Adjustment.

7-4-5(a). IE Gain Adjustment

- Note

• This adjustment should be performed after 7-4-3. Test Signal Waveform Adjustment is completed.

- Setting

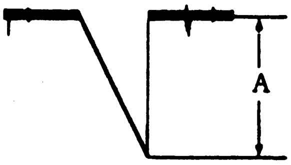
Equipment: Dualtrace Oscilloscope	Board: IE-30/P board

- Preparation

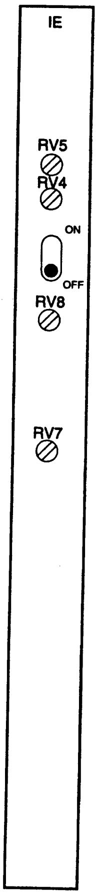
- To be extended; IE-30/P board
- S3 (TEST SAW)/SG-152AP : ON
- GAIN selector (side panel) : 0

- Adjustment procedures

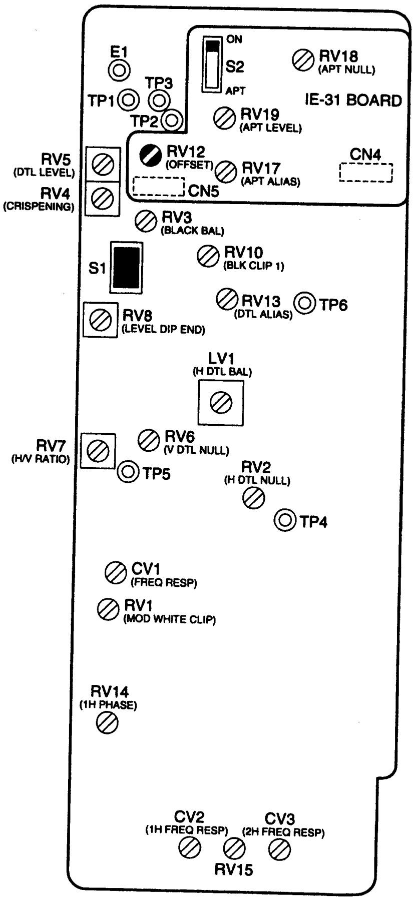
- Test point : TP45/Extension board
- Adj. point : ● RV12 (OFFSET)/ IE-30/P
- Spec. : A = 0.50 ±0.01 V



TRIG: CLAMP (TP16/Extension board)


IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


E1
TP3
TP1
TP2
ON
S2
APT
RV18 (APT NULL)
IE-31 BOARD
RV19 (APT LEVEL)
RV5 (DTL LEVEL)
RV4 (CRISPENING)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN5
CN4
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV8 (LEVEL DIP END)
RV13 (DTL ALIAS)
TP6
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

- Note

• After adjustment is completed, set the S3/SG-152 to OFF.

7-4-6. PR Pre Gain Adjustment

• Note

- This adjustment should be performed after 7-4-3. Test Signal Waveform Adjustment is completed.

• Setting

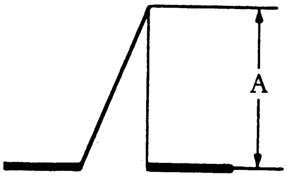
Equipment: Dualtrace Oscilloscope	Board: PR-176 board

• Preparation

- To be extended; PR-176 board
- S3 (TEST SAW)/SG-152AP: ON
- S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: OFF

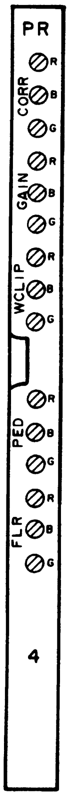
• Adjustment procedures

- Test point : G Pre Gain
  TP2/PR-176 board
  R Pre Gain
  TP1/PR-176 board
  B Pre Gain
  TP3/PR-176 board
- Adj. point : ⊘ RV21 (G GAIN 1)/PR-176
  ⊘ RV1 (R GAIN 1)/PR-176
  ⊘ RV25 (B GAIN 1)/PR-176
- Spec. :

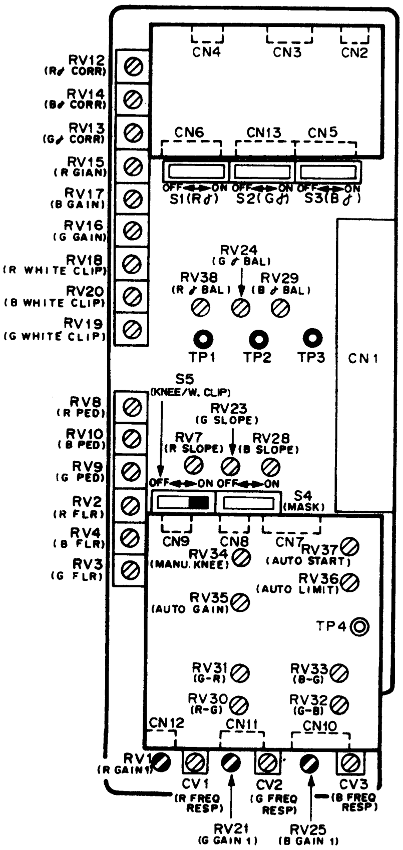


A = 2.00±0.01V

TRIG: HD (TP14/Extension board)


PR
R
B
G
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
4

PR-176/U BOARD
(PANEL SIDE)


CN4
CN3
CN2
RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN6
CN13
CN5
OFF◄►ON OFF◄►ON OFF◄►ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
OFF◄►ON OFF◄►ON
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU. KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

• Note

- After adjustment is completed, set the switches as follows: Switches on the PR-176 board
  S1 (R γ): ON
  S2 (G γ): ON
  S3 (B γ): ON
  S5 (WHITE CLIP & KNEE ON/OFF): ON
- Switch on the SG-152 board
  S3 (TEST SAW): OFF

7-4-7. Carrier Balance Adjustment

- Setting

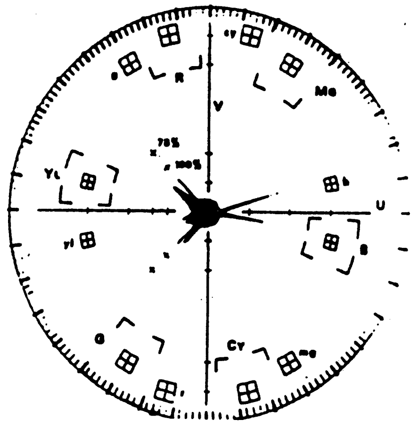
Equipment: Vectorscope	Board: EN-79P board

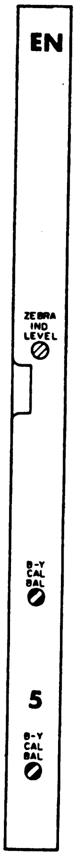
- Preparation

- OUTPUT/DCC SW (side panel): BARS/OFF

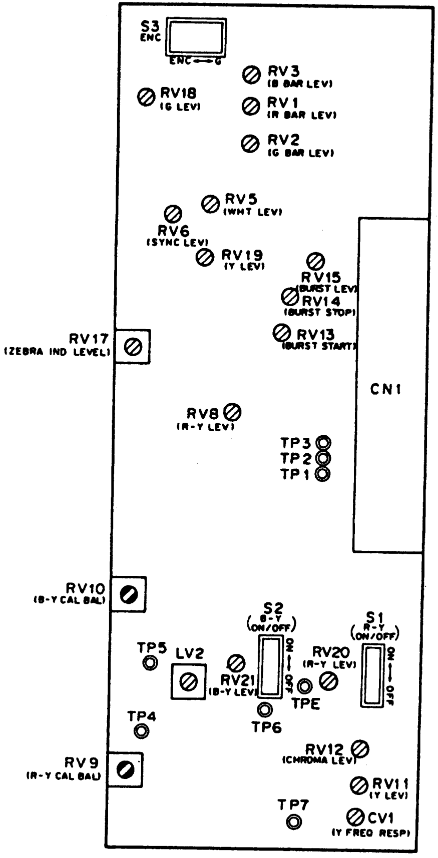
- Adjustment procedures

- Test point : VIDEO OUT Terminal
- Adj. point : ⊘ RV9 (R-Y CAL BAL)/EN-79P
  ⊘ RV10 (B-Y CAL BAL)/EN-79P
- Spec. : Turn RVs so that the black luminescent spot is in the center of the vectorscope.


R
Mg
YL
B
G
Cy
V
U
75%
100%


EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD (PANEL SIDE)


S3 ENC
ENC ⟷ G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV17 (ZEBRA IND LEVEL)
RV13 (BURST START)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 B-Y (ON/OFF)
S1 R-Y (ON/OFF)
TP5
LV2
RV20 (R-Y LEV)
RV21 (B-Y LEV)
ON
OFF
TPE
TP4
TP6
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

- Note

- When a black luminescent spot cannot be discriminated because of two or more luminescent spots, turn ⊘ RV1 (R BAR LEV) on the EN-79P board. The black luminescent spot will not move. After ⊘ RV1 is turned, make the 7-4-18 Color Bars Adjustment.

7-4-8. Black Shading Adjustment

- Setting

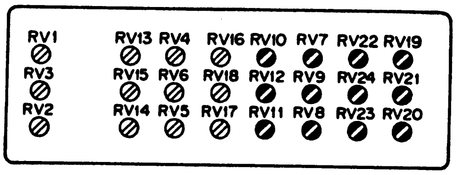
Equipment: Dualtrace Oscilloscope	Board: VA-104 board

- Preparation

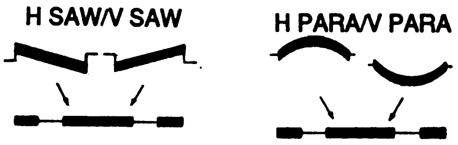
- To be extended; VA-104 board
- Set the iris control to CLOSE.
- GAIN selector (side panel): 18

- Adjustment procedures

- Test point : TP39/Extension board (G)
  TP41/Extension board (R)
  TP43/Extension board (B)
- Adj. point : (G)
  H SAW : ⊘ RV8/VA-104 (IC15)
  V SAW : ⊘ RV20/VA-104 (IC15)
  H PARA : ⊘ RV11/VA-104 (IC15)
  V PARA : ⊘ RV23/VA-104 (IC15)
  (R)
  H SAW : ⊘ RV7/VA-104 (IC15)
  V SAW : ⊘ RV19/VA-104 (IC15)
  H PARA : ⊘ RV10/VA-104 (IC15)
  V PARA : ⊘ RV22/VA-104 (IC15)
  (B)
  H SAW : ⊘ RV9/VA-104 (IC15)
  V SAW : ⊘ RV21/VA-104 (IC15)
  H PARA : ⊘ RV12/VA-104 (IC15)
  V PARA : ⊘ RV24/VA-104 (IC15)
- Spec. :


RV1
RV13 RV4 RV16 RV10 RV7 RV22 RV19
RV3
RV15 RV6 RV18 RV12 RV9 RV24 RV21
RV2
RV14 RV5 RV17 RV11 RV8 RV23 RV20

H.IC (IC15)
(COMPONENT SIDE) -On the VA-104 Board-


H SAW/V SAW
H PARA/V PARA

H TRIG: HD (TP18/Extension board)
V TRIG: VD (TP17/Extension board)

1. When a 10k-ohm resistor is connected to the probe, the waveform can be easily observed on the oscilloscope.
2. When the black shading occurs, adjust the RVs so that the waveform is flat.

- Note

- After adjustment is completed, set the GAIN selector (side panel) to 0.

7-4-9. White Shading Adjustment

• Note

• This adjustment should be performed after the 7-4-5 Modulator Balance Adjustment is completed.

• Setting

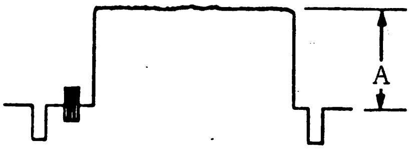
Equipment: Dualtrace Oscilloscope	Board: VA-104 board

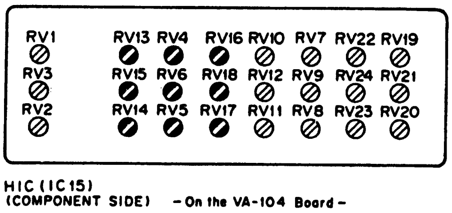
• Preparation

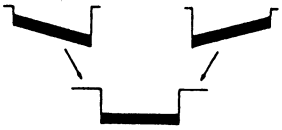
• To be extended; VA-104 board
• S5 (WHITE CLIP & KNEE ON/OFF) / PR-176: OFF
• Set the zoom control to TELE and shoot the white area of the white window chart.

• Adjustment procedures

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : A=700 ± 10mV




RV1
RV3
RV2
RV13 RV4 RV16 RV10 RV7 RV22 RV19
RV15 RV6 RV18 RV12 RV9 RV24 RV21
RV14 RV5 RV17 RV11 RV8 RV23 RV20
HIC (IC15)
(COMPONENT SIDE) - On the VA-104 Board -



2. • Test point : TP39/Extension board (G)
   TP41/Extension board (R)
   TP43/Extension board (B)
   • Adj. point : (G)
   H MOD SAW : ⊘ RV5/VA-104 (IC15)
   V MOD SAW : ⊘ RV17/VA-104 (IC15)
   V EXT SAW : ⊘ RV14/VA-104 (IC15)
   : (R)
   H MOD SAW : ⊘ RV4/VA-104 (IC15)
   V MOD SAW : ⊘ RV16/VA-104 (IC15)
   V EXT SAW : ⊘ RV13/VA-104 (IC15)
   : (B)
   H MOD SAW : ⊘ RV6/VA-104 (IC15)
   V MOD SAW : ⊘ RV18/VA-104 (IC15)
   V EXT SAW : ⊘ RV15/VA-104 (IC15)
   • Spec. : When the white shading occurs, adjust the RVs so that the waveform is flat.

(NOTE):
The V EXT SAW Adjustment is performed when the lens with an extender is used. Before adjustment, set the lense's EXT lever to the X2 position and adjust the iris control so that the output level at the VIDEO OUT terminal is 100 IRE. After adjustment is completed set the EXT level to the X1 position.

• Note

• After adjustment is completed, set S5 (WHITE CLIP & KEEP ON/OFF) on the PR-176 board to ON.

7-4-10. Black Set-Pedestal Adjustment

Step 1.

- NOTE

- This adjustment should be performed after the correction data of the microcomputer is erased.

- Setting

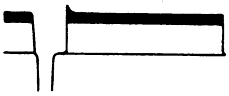
Equipment: Waveform Monitor	Board: VA-104 board

- Preparation

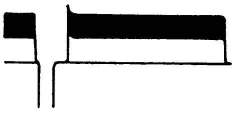
- To be extended; VA-104 board
- Set the IRIS control to CLOSE.
- S3 (Y/G SELECT)/EN-79P: G
- Adjust the PEDESTAL control (on side panel) so that the pedestal level is approximately 70mV.

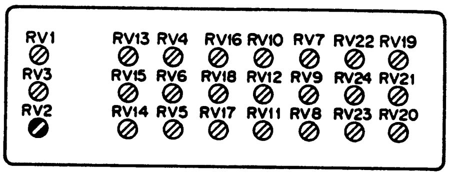
- Adjustment procedures

- Test point : Waveform Monitor (LUM mode)
- Adj. point : ● RV8 (G BLK SET)/VA-104
  ● RV2 (G +18dB BLK SET)
  /VA-104, IC15
- Spec. : 1. Adjust so that the pedestal level does not fluctuate when the gain switch is set from 0 to 9 and vice versa.

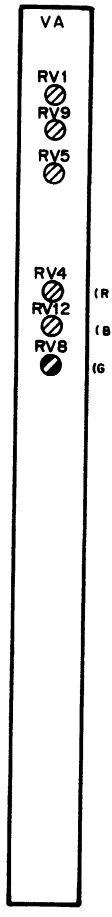


2. Adjust so that the pedestal level does not fluctuate when the gain switch is set from 0 to 18 and vice versa.

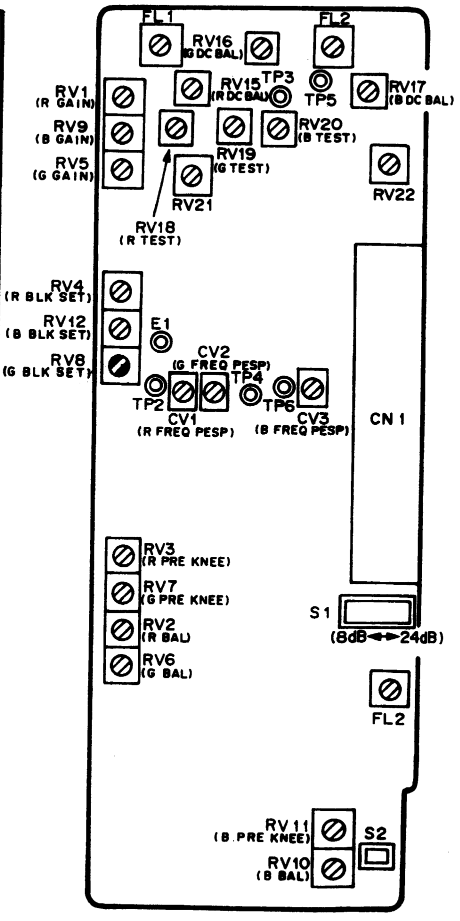



RV1
RV3
RV2
RV13 RV4 RV16 RV10 RV7 RV22 RV19
RV15 RV6 RV18 RV12 RV9 RV24 RV21
RV14 RV5 RV17 RV11 RV8 RV23 RV20

HIC (IC15)
(COMPONENT SIDE) -On the VA-104 Board-


VA
RV1
RV9
RV5
RV4
RV12
RV8

VA-104 BOARD
(PANEL SIDE)


FL1
RV16 (G DC BAL)
FL2
RV1 (R GAIN)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV9 (B GAIN)
RV20 (B TEST)
RV19 (G TEST)
RV5 (G GAIN)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
E1
RV8 (G BLK SET)
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(8dB◄►24dB)
FL2
RV11 (B PRE KNEE)
S2
RV10 (B BAL)

VA-104 BOARD (COMPONENT SIDE)

Step 2.

- **Setting**

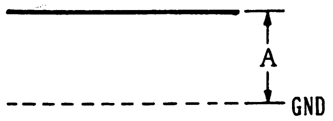
Equipment: Dualscope Oscilloscope (DC mode)	Board: PR-176 board

- **Preparation**

- To be extended; PR-176 board

- **Adjustment procedures**

- Test point : TP39/Extension board
- Adj. point : PEDESTAL control (side panel)
- Spec. : A = +2.3 ± 0.1 Vdc



Step 3.

• Setting

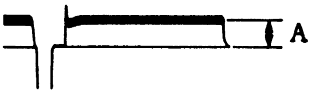
Equipment: Waveform Monitor	Board: PR-176 board

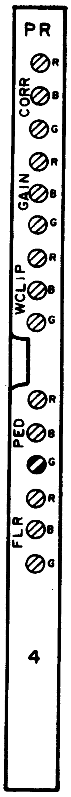
• Preparation

• GAIN selector (side panel): 0

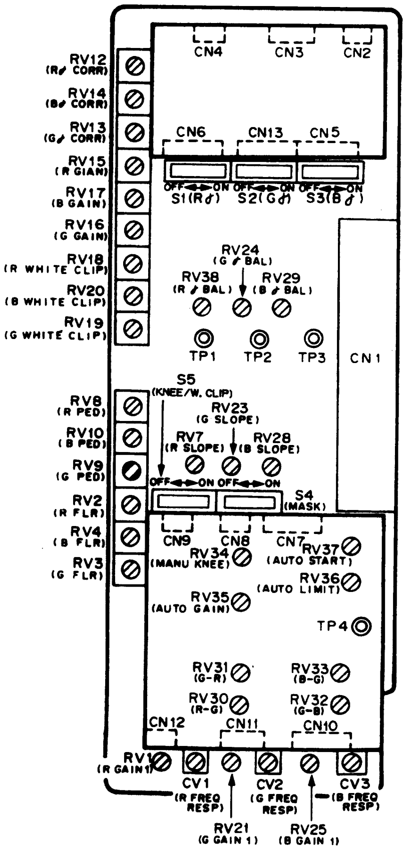
• Adjustment procedures

- Test point : Waveform Monitor (LUM mode)
- Adj. point : ⊘ RV9 (G PED)/PR-176
- Spec. : A = 20mV




PR
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
R
B
G
4

PR-176/U BOARD
(PANEL SIDE)


RV12 (R γ CORR)
RV14 (B γ CORR)
RV13 (G γ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN4
CN3
CN2
CN6
CN13
CN5
OFF ON
S1(Rγ)
S2(Gγ)
S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
OFF ON
OFF ON
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN 1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 4

- **Setting**

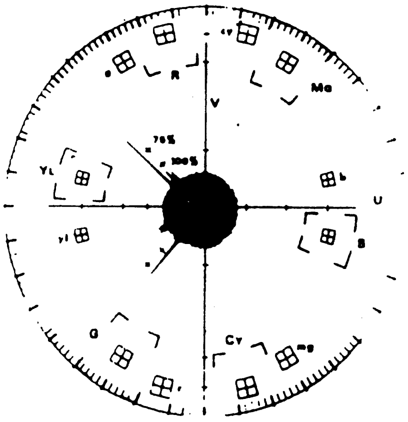
Equipment: Vectorscope	Board: PR-176 board

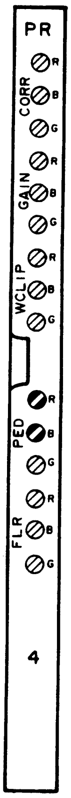
- **Preparation**

• S3 (Y/G SELECT)/EN-79P: ENC

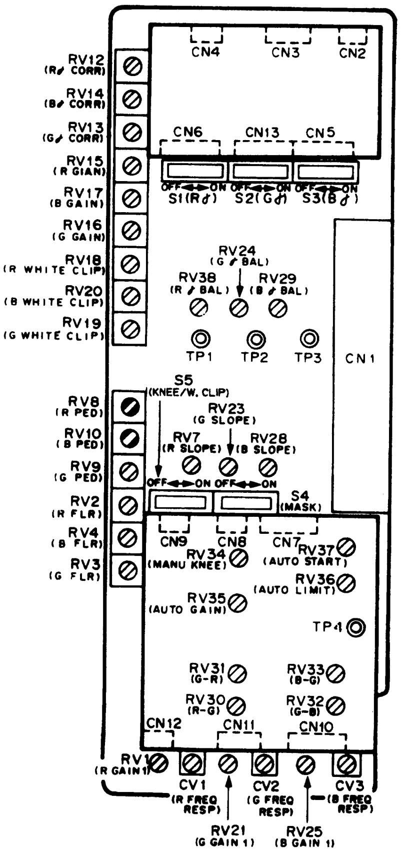
- **Adjustment procedures**

- Test point : Vectorscope
- Adj. point : ⊘RV8 (R PED)/PR-176
  ⊘RV10 (B PED)/PR-176
- Spec. : Adjust so that the luminescent spot is in the center.


R
Mg
V
U
YL
B
G
Cy
75%
100%


PR
CORR
GAIN
WCLIP
PED
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)


RV12 (R/ CORR)
RV14 (B/ CORR)
RV13 (G/ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN4
CN3
CN2
CN6
CN13
CN5
OFF◄►ON
S1(R♂)
S2(G♂)
S3(B♂)
RV24 (G / BAL)
RV38 (R / BAL)
RV29 (B / BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 5

- Setting

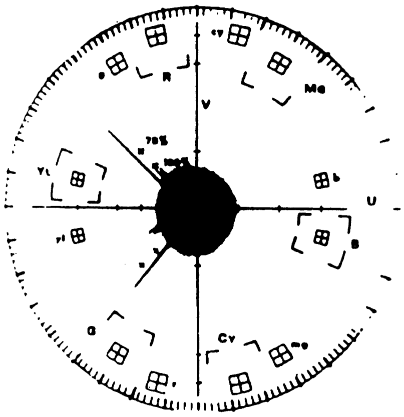
Equipment: Vectorscope	Board: VA-104 board

- Preparation

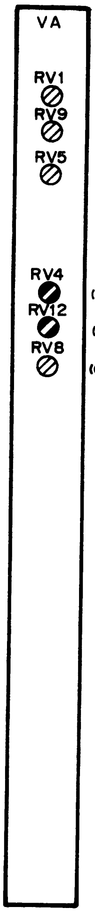
- To be extended: VA-104 board
- GAIN selector (side panel): 9

- Adjustment procedures

- Test point : Vectorscope
- Adj. point : ⊘RV4 (R BLK SET)/VA-104
  ⊘RV12 (B BLK SET)/VA-104
- Spec. : Adjust so that the luminescent spot is in the center.

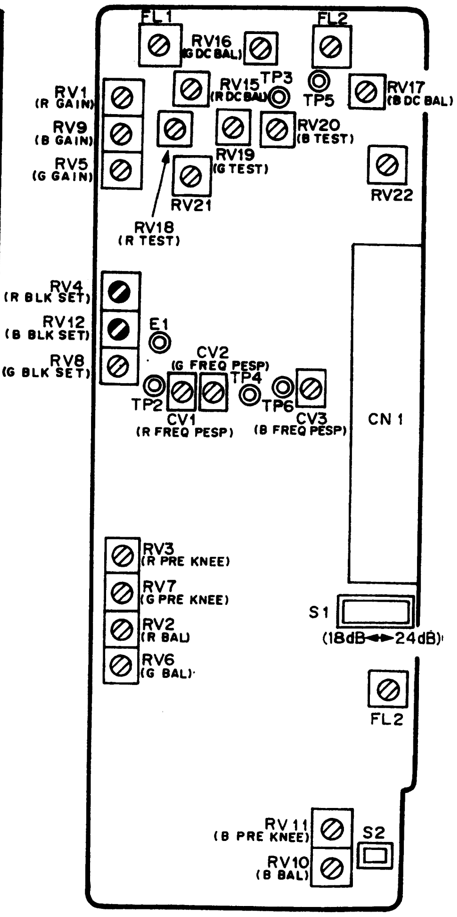


R
Mg
V
U
YL
B
G
Cy
75%



VA
RV1
RV9
RV5
RV4
RV12
RV8

VA-104 BOARD (PANEL SIDE)



FL1
FL2
RV16 (G DC BAL)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(18dB◄►24dB)
FL2
RV 11 (B PRE KNEE)
RV10 (B BAL)
S2

VA-104 BOARD (COMPONENT SIDE)

Step 6

- **Setting**

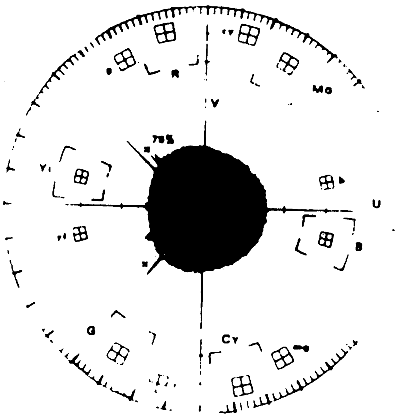
Equipment: Vectorscope	Board: VA-104 board

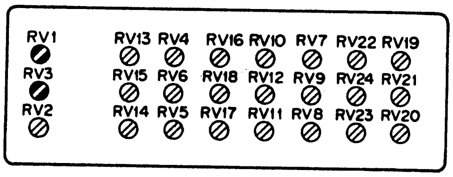
- **Preparation**

- GAIN selector (side panel): 18

- **Adjustment procedures**

- Test point : Vectorscope
- Adj. point : ⊘RV1 (R + 18dB BLK SET)/VA-104, IC15
  ⊘RV3 (R + 18dB BLK SET)/VA-104, IC15
- Spec. : Adjust so that the luminescent spot is in the center.


R
MG
V
75%
YL
U
B
G
CY


RV1
RV3
RV2
RV13 RV4 RV16 RV10 RV7 RV22 RV19
RV15 RV6 RV18 RV12 RV9 RV24 RV21
RV14 RV5 RV17 RV11 RV8 RV23 RV20

HIC (IC15)
(COMPONENT SIDE) -On the VA-104 Board-

Step 7

- Setting

Equipment: Vectorscope	Board: PR-176/VA-104 boards

- Preparation

- GAIN selector (side panel): 0 ↔ 9 ↔ 18

- Adjustment procedures

- Test point : Vectorscope
- Spec. : Adjust so that the luminescent spot is in the center.

1. Repeat the Steps 4 to 6.

7-4-11. Flare Adjustment

• Note

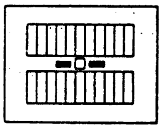
- This adjustment should be performed after the correction data of the microcomputer is erased.

• Setting

Equipment: Waveform Monitor	Board: PR-176 board

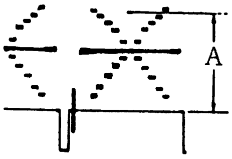
• Preparation

- To be extended; PR-176 board
- Cover the gray scale chart by the non-reflective cloth such as (velvet) which does not pass the light to be a reference of the black.
- S3 (Y/G SELECT)/EN-79P: ENC
- ⊘RV3 (G FLR)/PR-176
  : Fully turn counterclockwise. (G FLR OFF)
- Shoot the gray scale chart in full underscan's picture frame of the monitor by zooming a lens.


(Monitor)

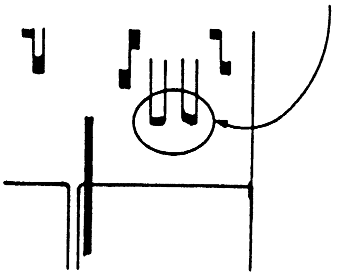
• Adjustment procedures

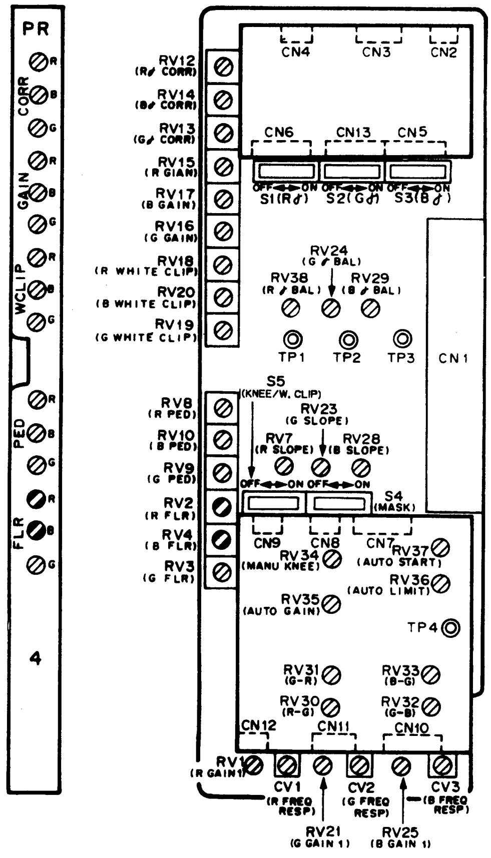
1. Test point : VIDEO OUT Terminal
   Adj. point : Iris control
   Spec. : A=700±10mV



Open the iris control by one step from the above state. (1F stop OPEN)

2. Test point : Waveform Monitor
   Adj. point : ⊘RV2 (R FLR)/PR-176
   ⊘RV4 (R FLR)/PR-176
   Spec. :


Minimize the carrier leak


PR
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
R
B
G
4
RV12 (R⁄ CORR)
RV14 (B⁄ CORR)
RV13 (G⁄ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN4
CN3
CN2
CN6
CN13
CN5
OFF ON
S1(R⁄)
S2(G⁄)
S3(B⁄)
RV24 (G ⁄ BAL)
RV38 (R ⁄ BAL)
RV29 (B ⁄ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (PANEL SIDE)

PR-176/U BOARD (COMPONENT SIDE)

7-4-12. PR GAIN Adjustment

Step 1.

• Note

- This adjustment should be performed after the 7-4-6. PR Pre Gain Adjustment is completed.

• Setting

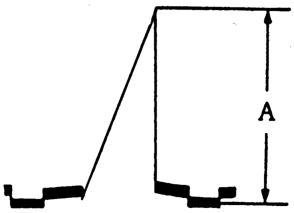
Equipment: Dualtrace Oscilloscope	Board: PR-176 board

• Preparation

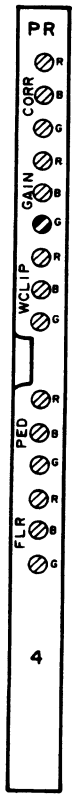
- To be extended; EN-79P board
- S3 (TEST SAW)/SG-152AP: ON
- Set the switches on the PR-176 board as follows:
  S1 (Rγ): OFF
  S2 (Gγ): OFF
  S3 (Bγ): OFF
  S5 (WHITE CLIP & KNEE ON/OFF): OFF

• Adjustment procedures

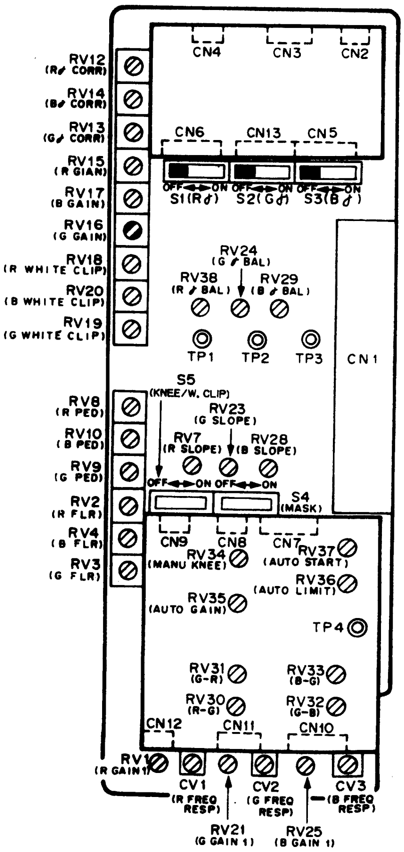
- Test point : TP2/EN-79P
  GND TPE/EN-79P
- Adj. point : ⊘RV16 (G GAIN)/PR-176
- Spec. : A=0.7±0.02V



TRIG:HD(TP14/Extension board)


PR
CORR
GAIN
WCLIP
PED
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)


RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN4
CN3
CN2
CN6
CN13
CN5
OFF ON OFF ON OFF ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
OFF ON OFF ON
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN 1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 2

• Note

- This adjustment should be performed after the 7-4-6. PR Pre Gain Adjustment is completed.

• Setting

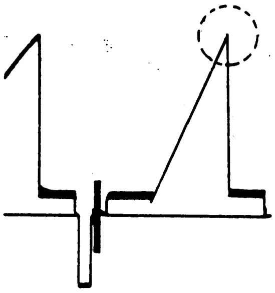
Equipment: Waveform Monitor	Board: PR-176 board

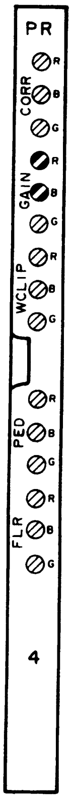
• Preparation

- Confirm that S3 (Y/G SELECT)/EN-79P is set to ENC.

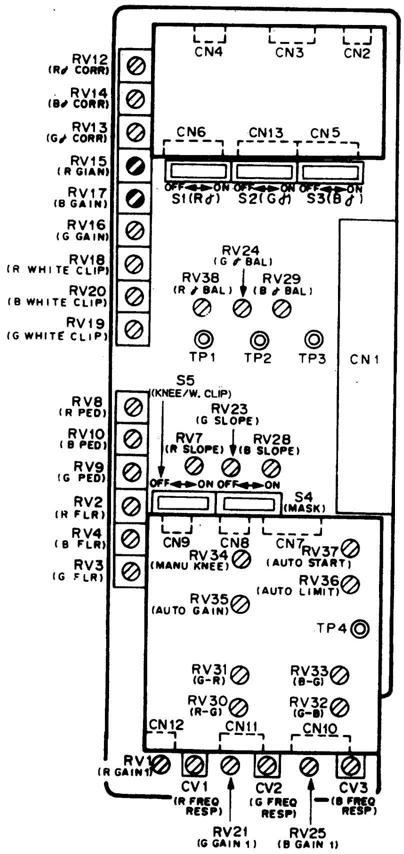
• Adjustment procedures

- Test point : VIDEO OUT Terminal
- Adj. point : ⊘RV15 (R GAIN)/PR-176
  ⊘RV17 (B GAIN)/PR-176
- Spec. : Adjust using an waveform monitor so that the carrier leak of the peak level at the VIDEO OUT terminal is minimized.




PR
CORR
GAIN
WCLIP
PED
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)


CN4
CN3
CN2
RV12 (R γ CORR)
RV14 (B γ CORR)
RV13 (G γ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN6
CN13
CN5
OFF ON OFF ON OFF ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
OFF ON OFF ON
S4 (MASK)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN 1)
CV1
CV2
CV3
(R FREQ RESP)
(G FREQ RESP)
(B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

• Note

- After adjustment is completed, set the switches as follows.
  S3 (TEST SAW)/SG-152AP: OFF
  S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: ON, S1(Rγ) → ON, S2(Gγ) → ON, S3(Bγ) → ON

7-4-13. Gamma Balance Adjustment

Step 1.

- **Note**

• This adjustment should be performed after the 7-4-12. PR GAIN Adjustment is completed.

- **Setting**

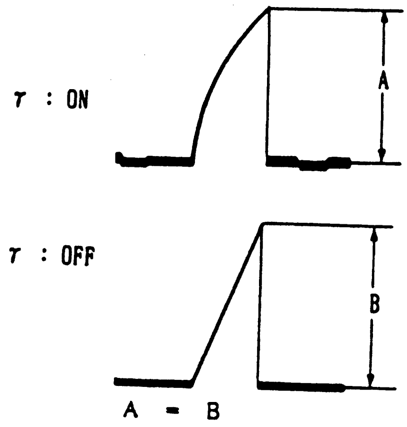
Equipment: Dualtrace Oscilloscope	Board: PR-176 board

- **Preparation**

- To be extended; PR-176 board
- S3 (TEST SAW)/SG-152AP: ON.
- Set the switches on the PR-176 board as follows:
  S1 (Rγ): ON
  S2 (Gγ): ON
  S3 (Bγ): ON
  S5 (WHITE CLIP & KNEE ON/OFF): OFF

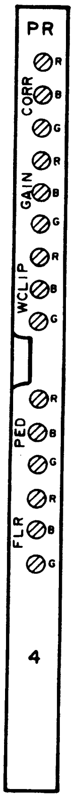
- **Adjustment procedures**

- Test point : TP31/Extension board
- Adj. point : ⊘RV24 (Gγ BAL)/PR-176
- Spec. : Adjust RV so that the peak level does not fluctuate irrespective of S2 (G γ) ON/OFF.



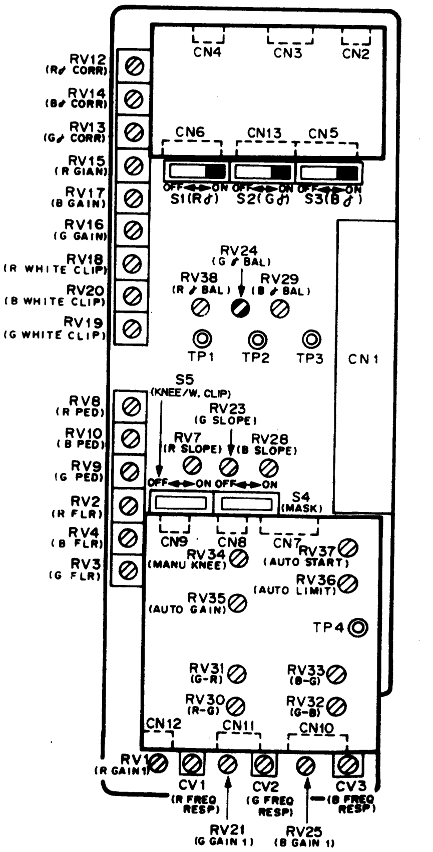
γ : ON
A
γ : OFF
B
A = B

TRIG: HD (TP14/Extension board)



PR
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)



CN4
CN3
CN2
RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN6
CN13
CN5
OFF◄►ON OFF◄►ON OFF◄►ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
OFF◄►ON OFF◄►ON
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 2

• Note

- This adjustment should be performed after the 7-4-12. PR GAIN Adjustment is completed.

• Setting

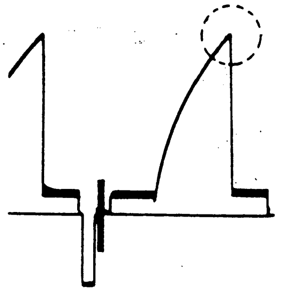
Equipment: Waveform Monitor	Board: PR-176 board

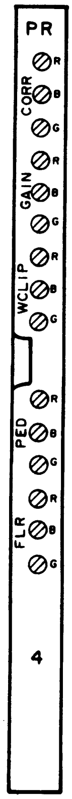
• Preparation

- Confirm that S3 (Y/G SELECT)/EN-79P is set to ENC.

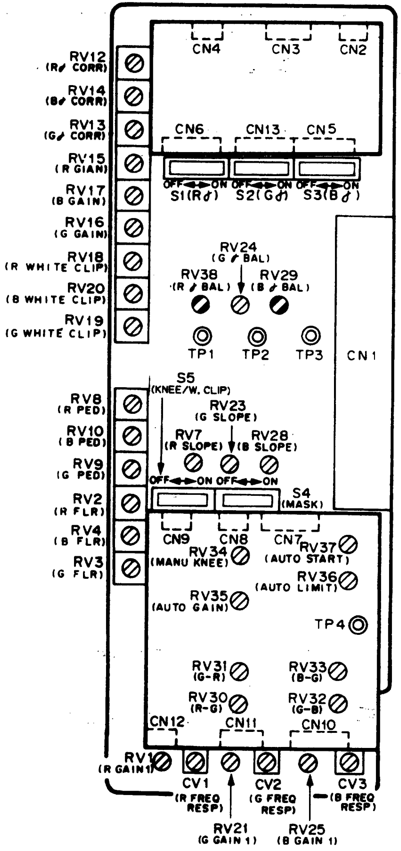
• Adjustment procedures

- Test point : VIDEO OUT Terminal
- Adj. point : ⊘RV38 (R γ BAL)/PR-176
  ⊘RV29 (B γ BAL)/PR-176
- Spec. : Adjust using an waveform monitor so that the carrier leak of the peak level at the VIDEO OUT terminal is minimized.




PR
CORR
GAIN
WCLIP
PED
FLR
R
B
G
4

PR-176/U BOARD
(PANEL SIDE)


RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN4
CN3
CN2
CN6
CN13
CN5
OFF◀▶ON
S1(Rγ)
S2(Gγ)
S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
S4 (MASK)
CN9
CN8
CN7
RV37 (AUTO START)
RV34 (MANU KNEE)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

• Note

- After adjustment is completed, set the switches as follows.
  S3 (TEST SAW)/SG-152AP: OFF
  S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: ON

7-4-14. EN Y Level Adjustment

• Setting

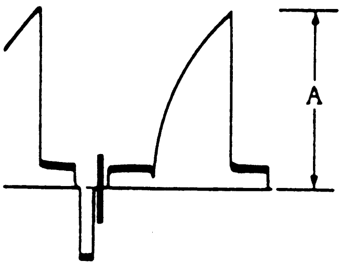
Equipment:Waveform Monitor	Board: EN-79P board

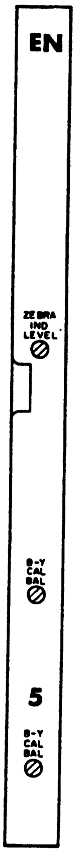
• Preparation

- S3 (Y/G SELECT)/EN-79P: ENC
- S3 (TEST SAW)/SG-152AP: ON
  S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: OFF
- OUTPUT/DCC sw (side panel): CAM/OFF

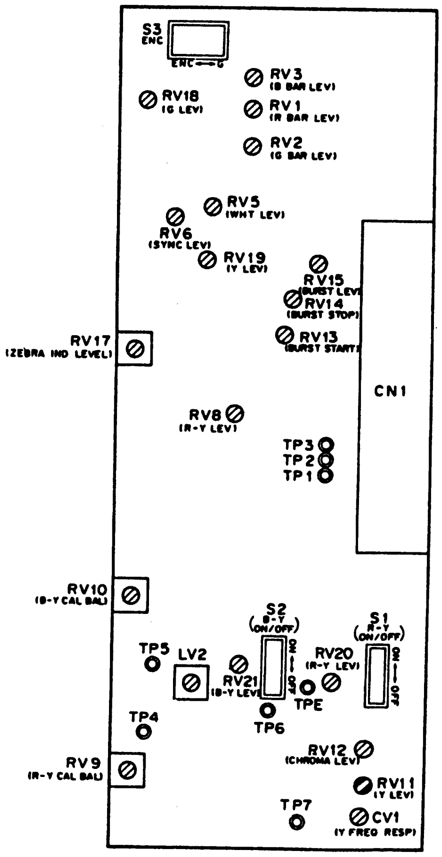
• Adjustment procedures

- Test point : VIDEO OUT Terminal
- Adj. point : ⊘RV11(Y LEV)/EN-79P
- Spec. : 1. OUTPUT/DCC SW (side panel): CAM/OFF
  Adjust so that the level A of the test waveform at the VIDEO OUT terminal is 700±10mV.




EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD
(PANEL SIDE)


S3
ENC
ENC ⟷ G
RV3
(B BAR LEV)
RV18
(G LEV)
RV1
(R BAR LEV)
RV2
(G BAR LEV)
RV5
(WHT LEV)
RV6
(SYNC LEV)
RV19
(Y LEV)
RV15
(BURST LEV)
RV14
(BURST STOP)
RV13
(BURST START)
RV17
(ZEBRA IND LEVEL)
CN1
RV8
(R-Y LEV)
TP3
TP2
TP1
RV10
(B-Y CAL BAL)
S2
(B-Y ON/OFF)
S1
(R-Y ON/OFF)
ON
OFF
TP5
LV2
RV21
(B-Y LEV)
RV20
(R-Y LEV)
TPE
TP6
TP4
RV12
(CHROMA LEV)
RV9
(R-Y CAL BAL)
RV11
(Y LEV)
TP7
CV1
(Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

• Note

- After adjustment is completed, set the switches as follows:
  OUTPUT/DCC (side panel): CAM/OFF
  S3 (TEST SAW)/SG-152AP: OFF
  S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: ON

7-4-15. G LEVEL Adjustment

- **Setting**

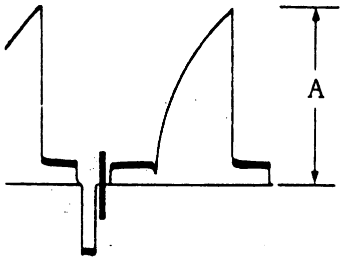
Equipment:Waveform Monitor	Board: EN-79P board

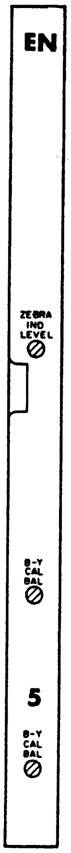
- **Preparation**

- To be extended: EN-79P board
- S3 (Y/G SELECT)/EN-79P: G
- S3 (TEST SAW)/SG-152AP: ON
- S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: OFF

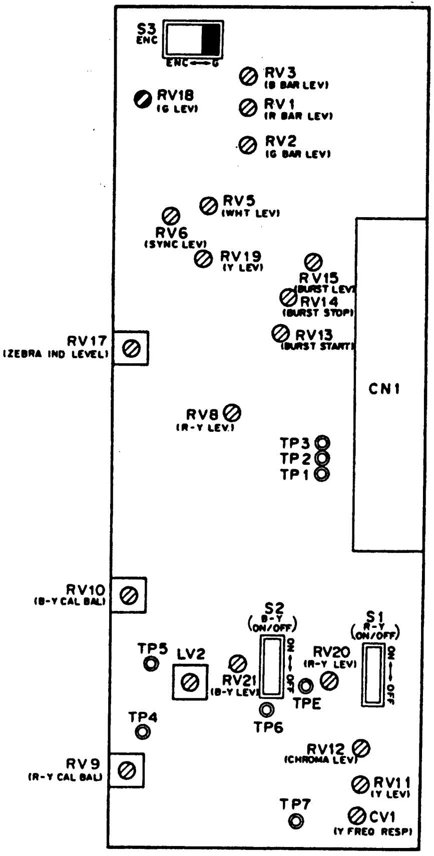
- **Adjustment procedures**

- Test point : Waveform Monitor
- Adj. point : ⊘RV18(G LEV)/EN-79P
- Spec. : Adjust so that the level A of the test waveform at the VIDEO OUT terminal is 700±10mV.




EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD
(PANEL SIDE)


S3 ENC
ENC ⟷ G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV17 (ZEBRA IND LEVEL)
RV13 (BURST START)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5
LV2
RV20 (R-Y LEV)
RV21 (B-Y LEV)
ON
OFF
TPE
TP4
TP6
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

- **Note**

- After adjustment is completed, set the switches as follows:
  S3 (TEST SAW)/SG-152AP: OFF
  S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: ON
  S3 (Y/G SELECT)/EN-79P: ENC

7-4-16. Gamma Correction Adjustment

Step 1

• Note

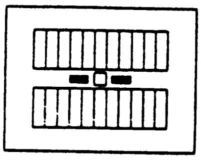
• This adjustment should be performed after the 7-4-13. Gamma Balance Adjustment is completed.

• Setting

Equipment: Waveform Monitor	Board: PR-176 board

• Preparation

- To be extended; PR-176 board
- S3 (Y/G SELECT)/EN-79P: G
- Set the switches on the PR-176 board as follows:
  - S1 (Rγ): ON
  - S2 (Gγ): ON
  - S3 (Bγ): ON
  - S5 (WHITE CLIP & KNEE ON/OFF): OFF
- Shoot the gray scale chart in full underscan's picture frame of the monitor by zooming a lens.

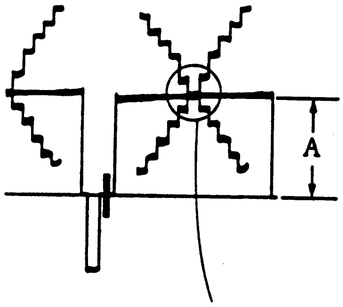


(Monitor)

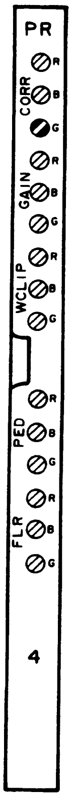
• Adjustment procedures

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700±10mV. (WHITE LEVEL)

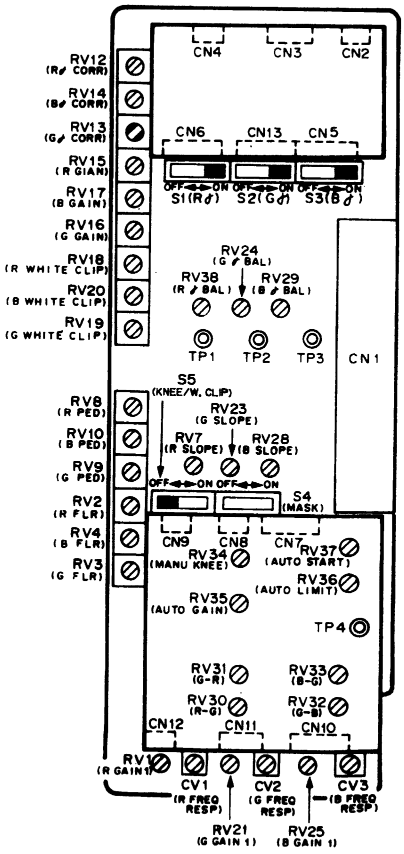
2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV13 (Gγ CORR)/PR-176
   • Spec. : 420±20mV



The level A at the cross point should be 420±20mV


PR
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)


CN4
CN3
CN2
RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN6
CN13
CN5
OFF◄►ON OFF◄►ON OFF◄►ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
OFF◄►ON OFF◄►ON
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 2

- **Setting**

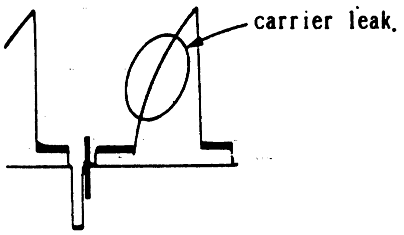
Equipment: Waveform Monitor	Board: PR-176 board

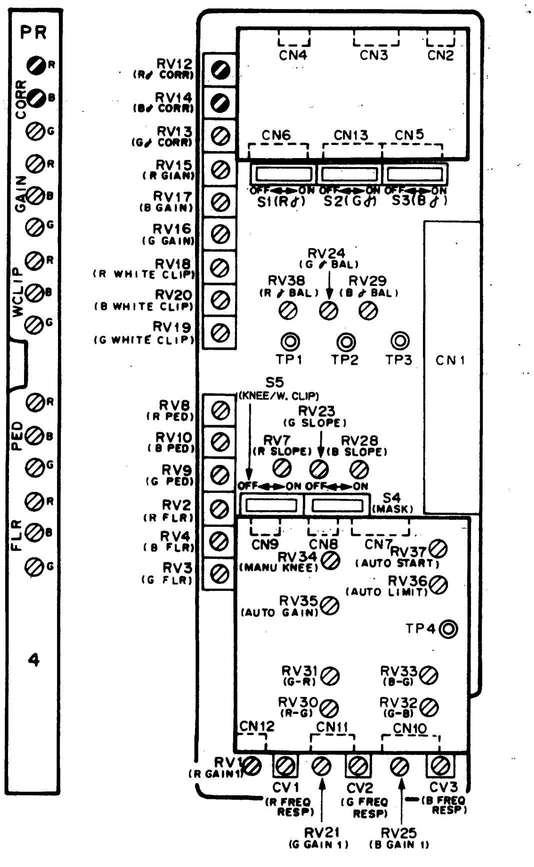
- **Preparation**

- S3 (Y/G SELECT)/EN-79P: ENC
- S3 (TEST SAW)/SG-152AP: ON

- **Adjustment procedures**

- Test point : VIDEO OUT Terminal
- Adj. point : ⊘RV12(Rγ CORR)/PR-176
  ⊘RV14(Bγ CORR)/PR-176
- Spec. : Minimize the carrier leak.


carrier leak.


PR
CORR
GAIN
WCLIP
PED
FLR
R
B
G
4
RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GAIN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN4
CN3
CN2
CN6
CN13
CN5
OFF ON
S1(Rγ)
S2(Gγ)
S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (PANEL SIDE)

PR-176/U BOARD (COMPONENT SIDE)

- **Note**

- After adjustment is completed, check that the specification in the 7-4-10 Black Set • Pedestal Adjustment is satisfied.
- After adjustment is completed, set the switches as follows.
  S3 (TEST SAW)/SG-152AP: OFF
  S5 (WHITE CLIP & KNEE ON/OFF)/PR-176: ON

7-4-17. Knee White Clip Adjustment

Step 1

- Note

• This adjustment should be performed after the 7-4-6. PR Pre Gain Adijustment is completed.

- Setting

Equipment: Waveform Monitor	Board: PR-176 board

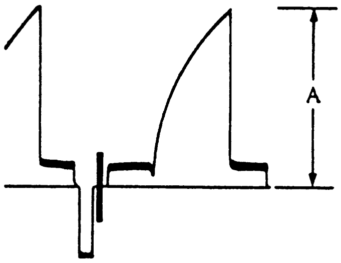
- Preparation

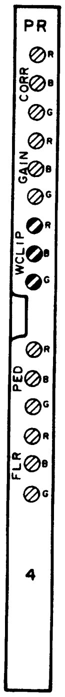
• To be extended; PR-176 board • GAIN selector (side panel): 0 • OUTPUT/DCC sw (side panel): CAM/OFF • S5 (WHITE CLIP & KNEE ON/OFF)/PR-176U: ON • S3 (Y/G SELECT)/EN-79P: G • S3 (TEST SAW)/SG-152AP: ON	• Fully turn the RVs on the PR-176 board clockwise. ⊘RV19 (G WHITE CLIP) ⊘RV18 (R WHITE CLIP) ⊘RV20 (B WHITE CLIP) ⊘RV23 (G SLOPE) ⊘RV7 (R SLOPE) ⊘RV28 (B SLOPE)

- Adjustment procedures

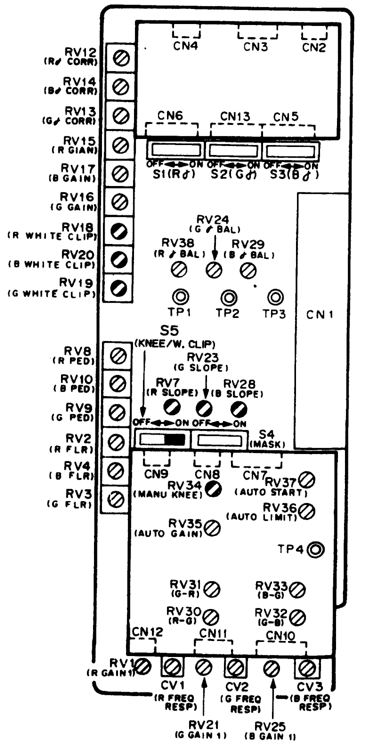
- Manual knee white clip adjustment
- Test point : VIDEO OUT Terminal
- Adj. point : ⊘RV34 (MANU KNEE)/PR-176 (PR-177)
- Spec. : Adjust the peak level at the VIDEO OUT terminal using a waveform monitor.

White clip level / Measurement point	750 mV	735 mV	720 mV
A(manual knee point)	690 mV	670 mV	670 mV




PR
R
CORR
B
G
R
GAIN
B
G
R
WCLIP
B
G
R
PED
B
G
R
FLR
B
G
4

PR-176/U BOARD (PANEL SIDE)


CN4
CN3
CN2
RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
CN6
CN13
CN5
RV15 (R GIAN)
RV17 (B GAIN)
OFF◄►ON OFF◄►ON OFF◄►ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV16 (G GAIN)
RV24 (Gγ BAL)
RV18 (R WHITE CLIP)
RV38 (Rγ BAL)
RV29 (Bγ BAL)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV8 (R PED)
RV23 (G SLOPE)
RV10 (B PED)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV9 (G PED)
OFF◄►ON OFF◄►ON
RV2 (R FLR)
S4 (MASK)
RV4 (B FLR)
CN9
CN8
CN7
RV37 (AUTO START)
RV34 (MANU KNEE)
RV3 (G FLR)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 2

- Note

• This adjustment should be perfromed after the 7-4-6. PR Pre Gain Adjustment is completed.

- Setting

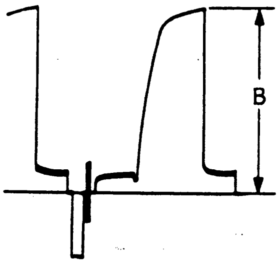
Equipment: Waveform Monitor	Board: PR-176 board

- Preparation

• GAIN selector (side panel): 9 • S3 (Y/G SELECT)/EN-79P: G

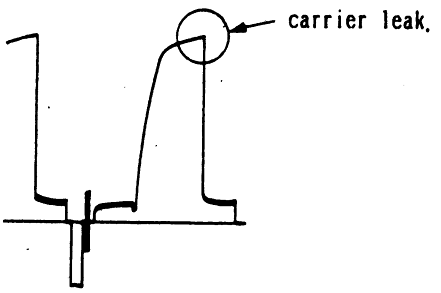
- Adjustment procedures

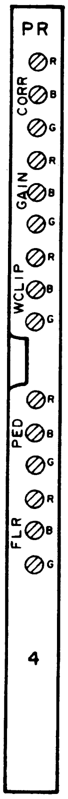
1. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV23 (G SLOPE)/PR-176
   • Spec. : Adjust the peak level at the VIDEO OUT terminal.



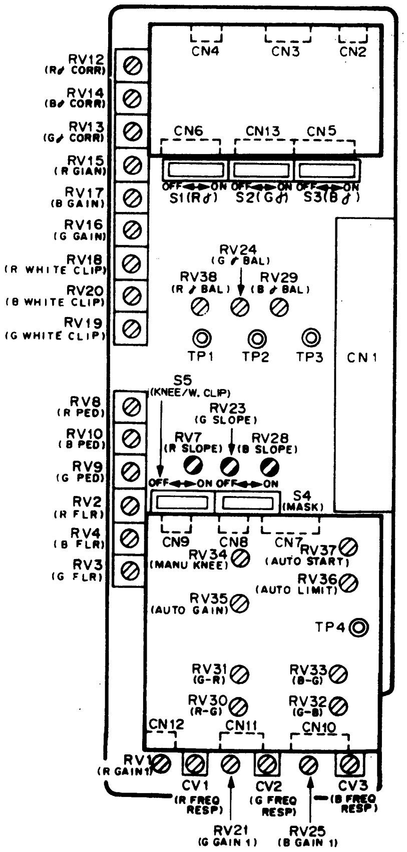
White clip level / Measurement point	750 mV	735 mV	720 mV
B (knee slope)	770 mV	750 mV	750 mV

2. • S3 (Y/G SELECT)/EN-79P : ENC
   • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV7 (R SLOPE)/PR-176
   ⊘RV28 (B SLOPE)/PR-176
   • Spec. : Minimize the carrier leak.


carrier leak.


PR
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
R
B
G
4

PR-176/U BOARD
(PANEL SIDE)


CN4
CN3
CN2
RV12 (R⸗ CORR)
RV14 (B⸗ CORR)
RV13 (G⸗ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN6
CN13
CN5
OFF◄►ON OFF◄►ON OFF◄►ON
S1(R⸗) S2(G⸗) S3(B⸗)
RV24 (G ⸗ BAL)
RV38 (R ⸗ BAL)
RV29 (B ⸗ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
OFF◄►ON OFF◄►ON
S4 (MASK)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 3

- Note

• This adjustment should be performed after the 7-4-6. PR Pre Gain Adjustmen is completed.

- Setting

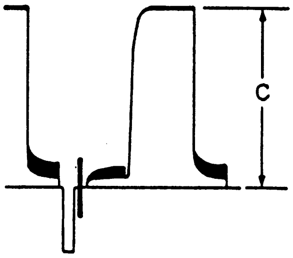
Equipment: Waveform Monitor	Board: PR-176 board

- Preparation

• S3 (Y/G SELECT)/EN-79P: G • GAIN selector (side panel): 18

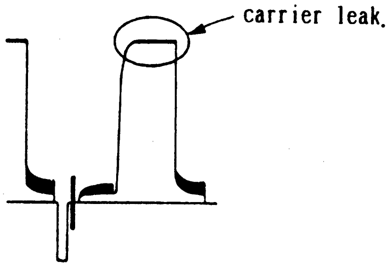
- Adjustment procedures

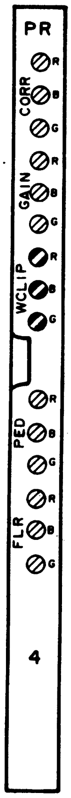
1. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV19 (G WHITE CLIP)/PR-176
   • Spec. : Adjust the white clip level at the VIDEO OUT terminal.



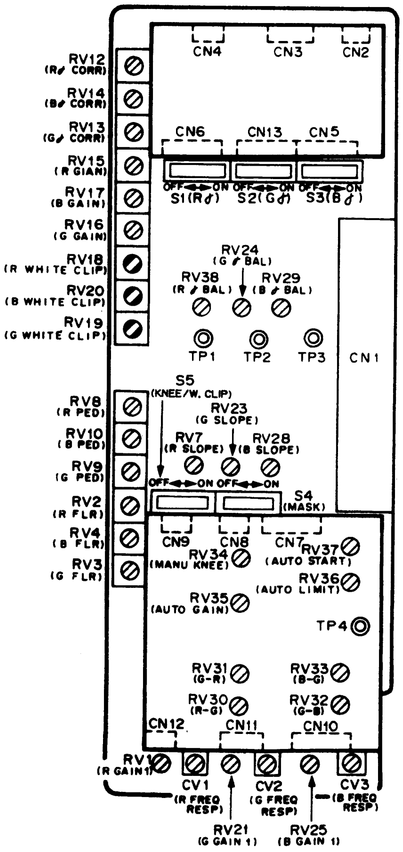
White clip level / Measurement point	750 mV	735 mV	720 mV
C(white clip)	750 mV	735 mV	720 mV

2. • S3 (Y/G SELECT)/EN-79P: ENC
   • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV18 (R WHITE CLIP)/PR-176
   ⊘RV20 (B WHITE CLIP)/PR-176
   • Spec. : Minimize the carrier leak.


carrier leak.


PR
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)


CN4
CN3
CN2
RV12 (R/ CORR)
RV14 (B/ CORR)
RV13 (G/ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN6
CN13
CN5
OFF◄►ON OFF◄►ON OFF◄►ON
S1(R/) S2(G/) S3(B/)
RV24 (G / BAL)
RV38 (R / BAL)
RV29 (B / BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
OFF◄►ON OFF◄►ON
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN 1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 4

- Note

- This adjustment should perfomed after the 7-4-6. PR Pre Gain Adjustment is completed.

- Setting

Equipment: Dualtrace Oscilloscope	Board: PR-176 board

- Preparation

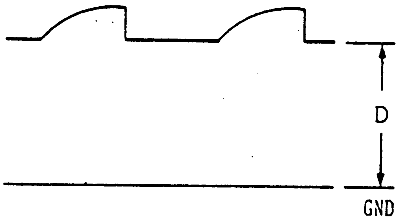
- GAIN selector (side panel): 18
- OUTPUT/DCC sw (side panel): CAM/OFF

- Adjustment procedures

Auto knee adjustment

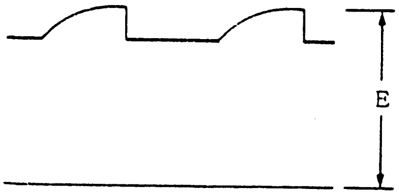
1. • Test point : TP4 (DCC SET)/PR-176 (PR-177)
   • Adj. point : ⊘RV37 (AUTO START)/PR-176 (PR-177)
   • Spec. :

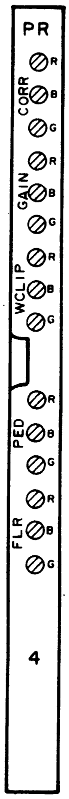
Measure-ment point \ White clip level	750 mV	735 mV	720 mV
D (DC at TP4)	2.65Vdc	2.65Vdc	2.60Vdc



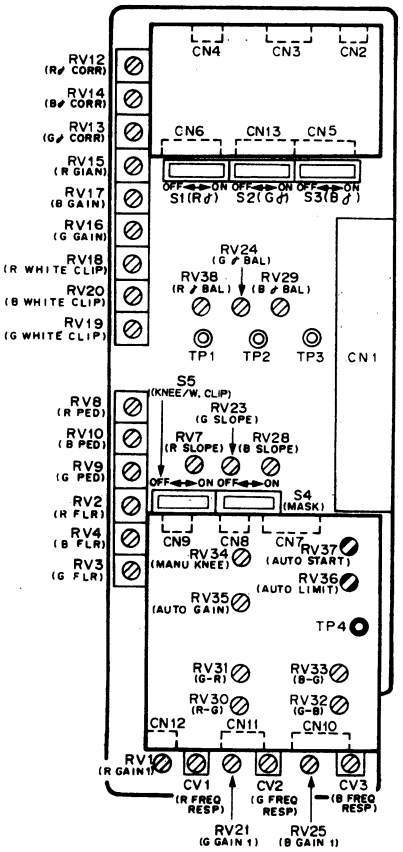
2. • Test point : TP4 (DCC SET)/PR-176 (PR-177)
   • Adj. point : ⊘RV36 (AUTO LIMIT)/PR-176 (PR-177)

Measure-ment point \ White clip level	750 mV	735 mV	720 mV
E (Peak at TP4)	2.95Vdc	2.95Vdc	2.90Vdc




PR
CORR
GAIN
WCLIP
PED
FLR
R
B
G
4

PR-176/U BOARD
(PANEL SIDE)


CN4
CN3
CN2
RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN6
CN13
CN5
OFF◄►ON
S1(Rγ)
S2(Gγ)
S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
S4 (MASK)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

Step 5

- Note

• This adjustment should perform after the 7-4-6. PR Pre Gain Adjustment is completed.

- Setting

Equipment: Waveform Monitor	Board: PR-176 board

- Preparation

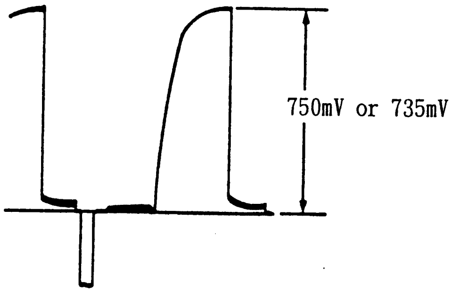
• OUTPUT/DCC sw (side panel): CAM/ON • S3 (Y/G SELECT)/EN-79P: G

- Adjustment procedures

Auto knee gain adjustment

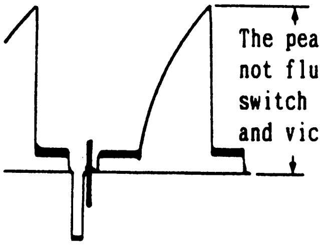
- Test point : VIDEO OUT Terminal
- Adj. point : ⊘RV35 (AUTO GAIN)/PR-176(PR-177)
- Spec. :
- 1. GAIN selector (side panel): 18

For white clip is 750mV or 735mV

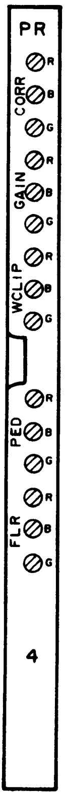

750mV or 735mV

- 2. GAIN selector (side panel): 0

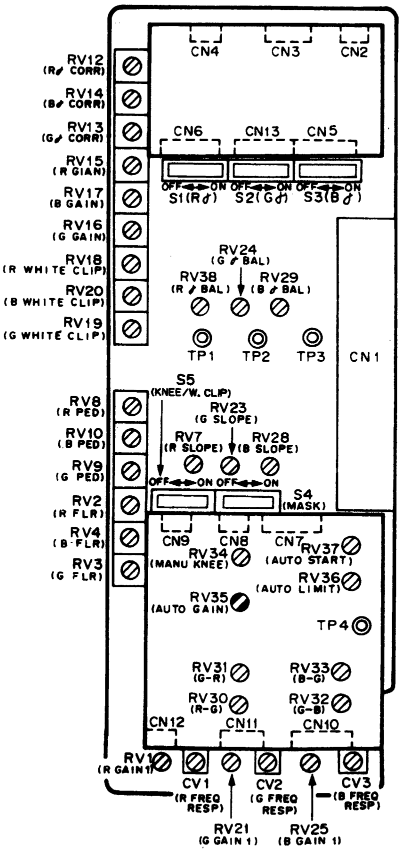
For white clip is 720mV
DCC-ON←→OFF



The peak level should not fluctuate when the DCC switch is set from ON to OFF and vice versa.


PR
CORR
GAIN
WCLIP
PED
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)


CN4
CN3
CN2
RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
CN6
CN13
CN5
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
OFF←→ON OFF←→ON OFF←→ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV8 (R PED)
RV10 (B PED)
RV7 (R SLOPE)
RV28 (B SLOPE)
RV9 (G PED)
OFF←→ON OFF←→ON
S4 (MASK)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD'(COMPONENT SIDE)

Step 6

- Note

• This adjustment should performe after the 7-4-6. PR Pre Gain Adjustment is completed.

- Setting

Equipment: Waveform Monitor	Board: PR-176 board

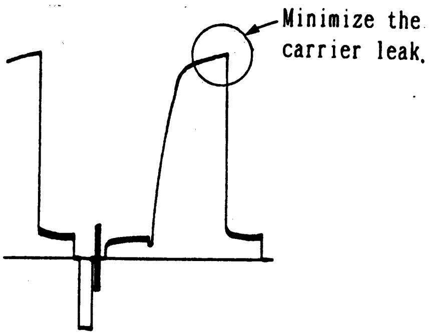
- Preparation

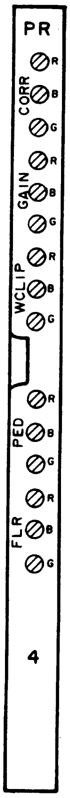
• GAIN selector (side panel): 18 • OUTPUT/DCC sw: CAM/ON • S3 (Y/G SELECT)/EN-79P: ENC

- Adjustment procedures

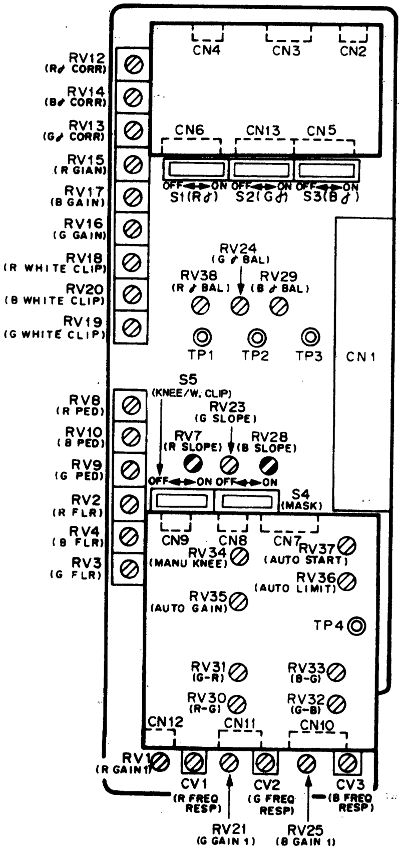
- Test point : VIDEO OUT Terminal
- Adj. point : ⊘RV7 (R SLOPE)/PR-176
  ⊘RV28 (B SLOPE)/PR-176
- Spec. :

For knee carrier leak is appeared too much


Minimize the carrier leak.


PR
CORR
R
B
G
GAIN
R
B
G
WCLIP
R
B
G
PED
R
B
G
FLR
R
B
G
4

PR-176/U BOARD (PANEL SIDE)


RV12 (Rγ CORR)
RV14 (Bγ CORR)
RV13 (Gγ CORR)
RV15 (R GIAN)
RV17 (B GAIN)
RV16 (G GAIN)
RV18 (R WHITE CLIP)
RV20 (B WHITE CLIP)
RV19 (G WHITE CLIP)
CN4
CN3
CN2
CN6
CN13
CN5
OFF◄►ON OFF◄►ON OFF◄►ON
S1(Rγ) S2(Gγ) S3(Bγ)
RV24 (G γ BAL)
RV38 (R γ BAL)
RV29 (B γ BAL)
TP1
TP2
TP3
CN1
S5 (KNEE/W. CLIP)
RV23 (G SLOPE)
RV7 (R SLOPE)
RV28 (B SLOPE)
OFF◄►ON OFF◄►ON
S4 (MASK)
RV8 (R PED)
RV10 (B PED)
RV9 (G PED)
RV2 (R FLR)
RV4 (B FLR)
RV3 (G FLR)
CN9
CN8
CN7
RV34 (MANU KNEE)
RV37 (AUTO START)
RV36 (AUTO LIMIT)
RV35 (AUTO GAIN)
TP4
RV31 (G-R)
RV33 (B-G)
RV30 (R-G)
RV32 (G-B)
CN12
CN11
CN10
RV1 (R GAIN1)
CV1 (R FREQ RESP)
CV2 (G FREQ RESP)
CV3 (B FREQ RESP)
RV21 (G GAIN 1)
RV25 (B GAIN 1)

PR-176/U BOARD (COMPONENT SIDE)

- Note

• After adjustment is completed, set the switches as follows. GAIN selector (side panel): 0 OUTPUT/DCC sw (side panel): CAM/OFF S3 (TEST SAW)/SG-152AP: OFF

7-4-18. Color Bars Adjustment

Step 1

- **Note**

- This adjustment should be performed after the 7-4-13. EN Y Level Adjustment is completed.

- **Setting**

Equipment: Waveform Monitor	Board: EN-79P board

- **Preparation**

- To be extended; EN-79P board
- OUTPUT/DCC sw (side panel): BARS /OFF
- S3 (Y/G SELECT) / EN-79P: ENC

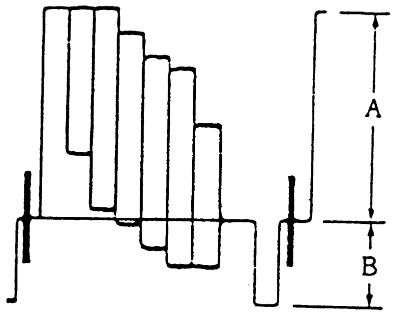
- **Adjustment procedures**

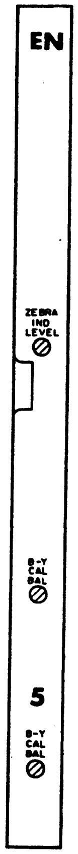
- Test point : VIDEO OUT Terminal
- Adj. point : • White level

⊘ RV2 (G BAR LEV)/EN-79P
⊘ RV1 (R BAR LEV)/EN-79P
⊘ RV3 (B BAR LEV)/EN-79P
• Sync level
⊘ RV6 (SYNC LEV)/EN-79P

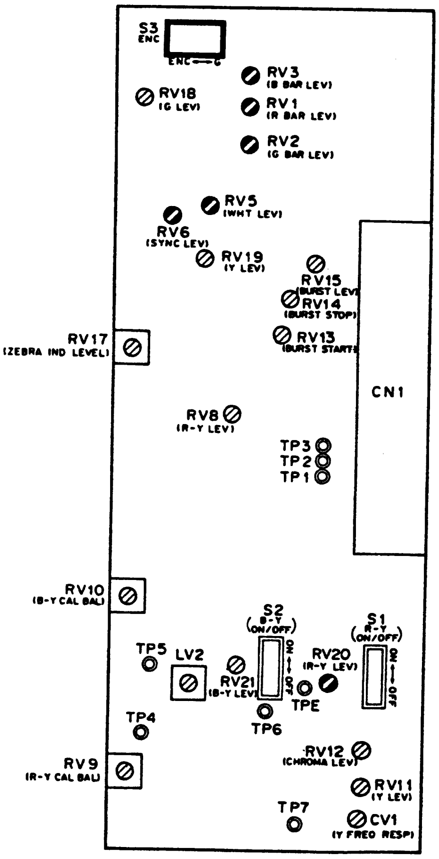
- Spec. : White level

A = 700 ± 10mV
Sync level
B = 300 ± 10mV




EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD
(PANEL SIDE)


S3 ENC
ENC ←→ G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV17 (ZEBRA IND LEVEL)
RV13 (BURST START)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
ON ←→ OFF
TP5
LV2
RV21 (B-Y LEV)
RV20 (R-Y LEV)
TPE
TP6
TP4
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

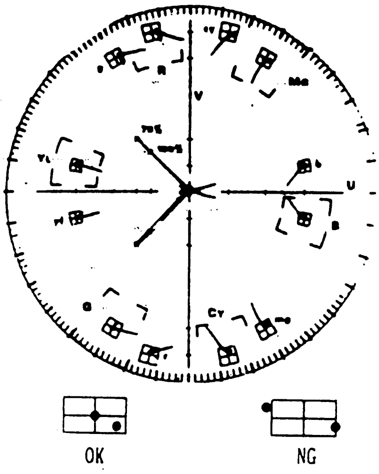
Step 2.

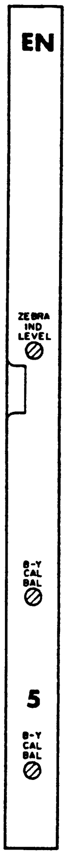
- Setting

Equipment: Vectorscope	Board: EN-79P board

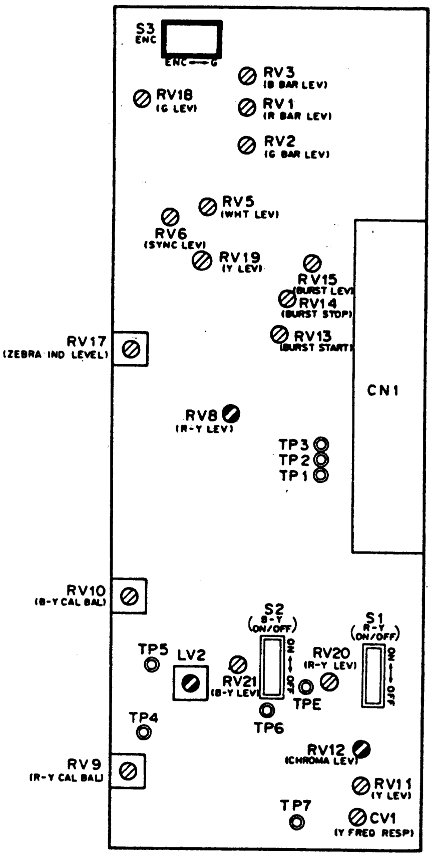
- Adjustment procedures

- Test point : Vectorscope
- Adj. point : ⊘ RV8 (R-Y LEV)/EN-79P
  ⊘ RV12 (CHROMA LEV)/EN-79P
  ⊘ LV2 (SC QUAD)/EN-79P
- Spec. : Set the luminescent spot in mark ⊞ on the vectorscope.


R
Mg
V
U
B
Cy
G
YL
OK
NG


EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD
(PANEL SIDE)


S3 ENC
ENC ⟷ G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV13 (BURST START)
RV17 (ZEBRA IND LEVEL)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
ON ⟷ OFF
TP5
LV2
RV21 (B-Y LEV)
RV20 (R-Y LEV)
TPE
TP6
TP4
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

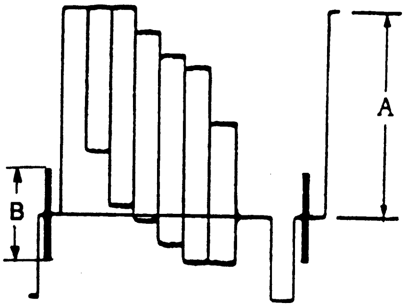
Step 3.

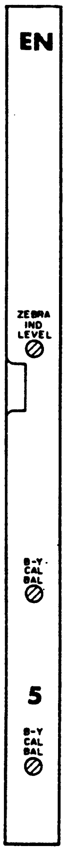
- Setting

Equipment: Waveform Monitor	Board: EN-79P board

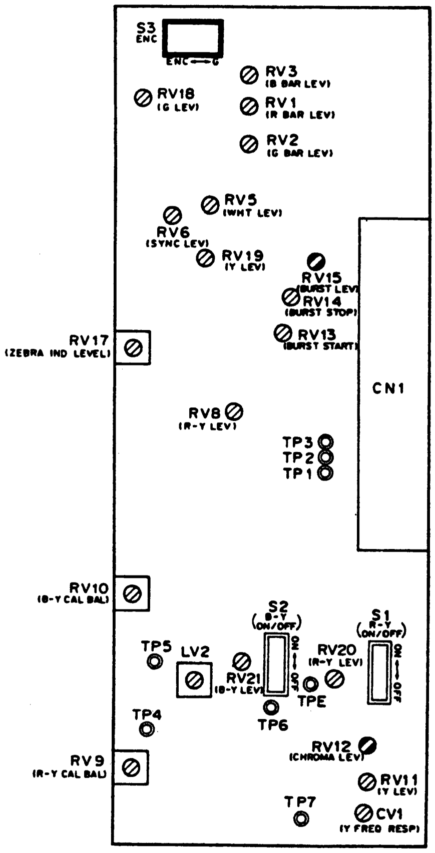
- Adjustment procedures

- Test point : VIDEO OUT Terminal
- Adj. point : ⊘ RV12 (CHROMA LEV) /EN-79P
  ⊘ RV15 (BURST LEV) /EN-79P
- Spec. : Adjust so that the yellow peak level A is 700 ± 10mV and the burst level B is 300 ± 10mV




EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD (PANEL SIDE)


S3 ENC
ENC ⟵ G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV13 (BURST START)
RV17 (ZEBRA IND LEVEL)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5
LV2
RV21 (B-Y LEV)
RV20 (R-Y LEV)
TPE
TP4
TP6
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

- Note

- After adjustment is completed, the luminescent spot on the setup 0's vectorscope is located in mark ⊞. For vectorscopes other than the above, the spot is not located in mark ⊞.
- After adjustment is completed, set the OUTPUT/DCC switch (side panel) to CAM/OFF.

7-4-19. VTR Y Adjustment

- Setting

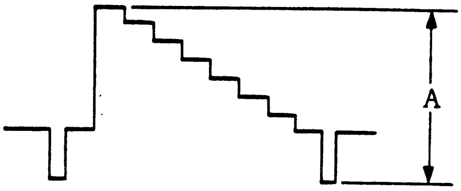
Equipment: Dualtrace Oscilloscope	Board: EN-79P board

- Preparation

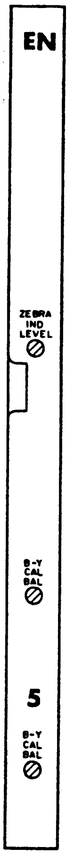
- To be extended; EN-79P board
- OUTPUT/DCC sw: BARS/OFF

- Adjustment procedures

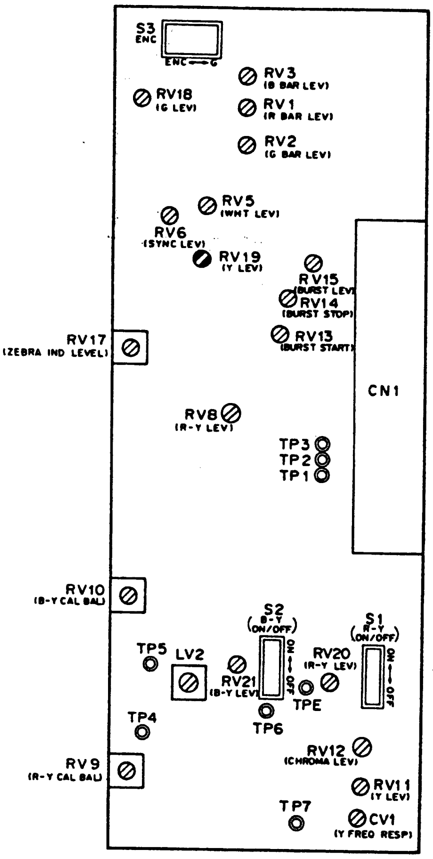
- Test point : TP5 (GND: TP6) /Extension board
- Adj. point : ⊘ RV19 (VTR Y LEV) /EN-79P
- Spec. : A = 1.0 ± 0.01V



TRIG: HD (TP14/Extension board)


EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD (PANEL SIDE)


S3 ENC
ENC⟷G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV17 (ZEBRA IND LEVEL)
RV13 (BURST START)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5
LV2
RV20 (R-Y LEV)
RV21 (B-Y LEV)
ON OFF
TPE
TP4
TP6
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

- Note

- After adjustment is completed, set the OUTPUT/DCC switch to CAM/OFF.

7-4-20. VTR R-Y Adjustment

- **Setting**

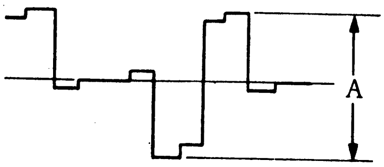
Equipment: Dualtrace Oscilloscope	Board: EN-79P board

- **Preparation**

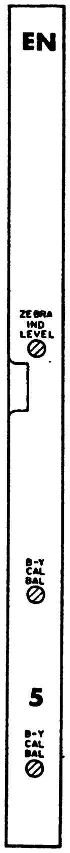
- To be extended; EN-79P board
- OUTPUT/DCC sw: BARS/OFF

- **Adjustment procedures**

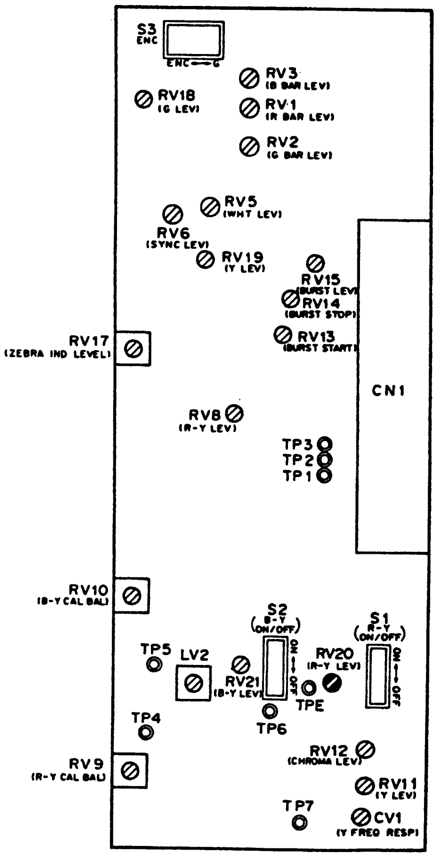
- Test point : TP7(GND: TP8) /Extension board
- Adj. point : ⊘ RV20(R-Y LEV)/EN-79P
- Spec. : A = 525 ± 5mV



TRIG: HD (TP14/Extension board)


EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD
(PANEL SIDE)


S3 ENC
ENC — G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV17 (ZEBRA IND LEVEL)
RV13 (BURST START)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5
LV2
RV20 (R-Y LEV)
RV21 (B-Y LEV)
TPE
TP6
TP4
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

- **Note**

- After adjustment is completed, set the OUTPUT/DCC switch to CAM/OFF.

7-4-21. VTR B–Y Adjustment

- **Setting**

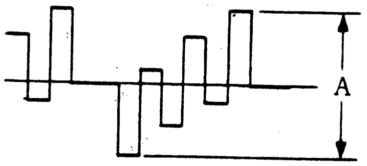
Equipment: Dualtrace Oscilloscope	Board: EN-79P board

- **Preparation**

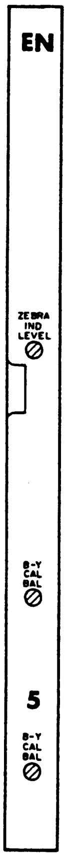
- To be extended; EN-79P board
- OUTPUT/DCC sw: BARS/OFF

- **Adjustment procedures**

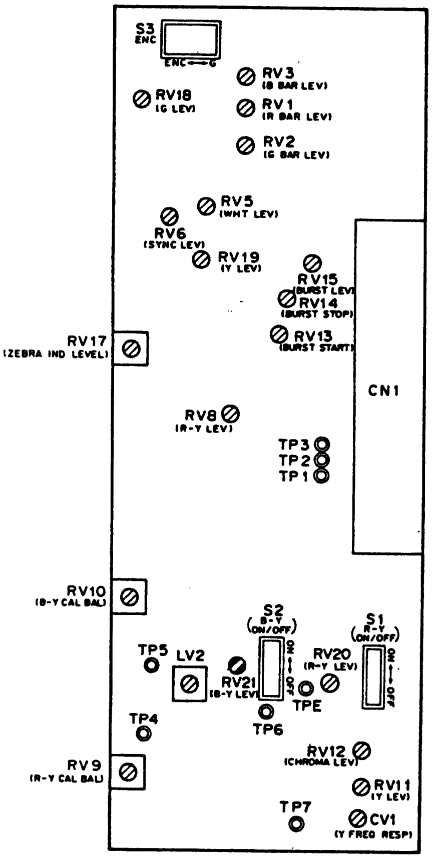
- Test point : TP9 (GND: TP10) /Extension board
- Adj. point : ⊘ RV21 (B–Y LEVEL) /EN-79P
- Spec. : A = 525 ± 5mV



TRIG: HD (TP14/Extension board)


EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL

EN-79P BOARD (PANEL SIDE)


S3 ENC
ENC ⟷ G
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV17 (ZEBRA IND LEVEL)
RV13 (BURST START)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5
LV2
RV21 (B-Y LEV)
ON ⟷ OFF
RV20 (R-Y LEV)
TPE
TP4
TP6
RV12 (CHROMA LEV)
RV9 (R-Y CAL BAL)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD(COMPONENT SIDE)

- **Note**

- After adjustment is completed, set the OUTPUT/DCC switch to CAM/OFF.

7-4-22. Zebra Level Adjustment

- Setting

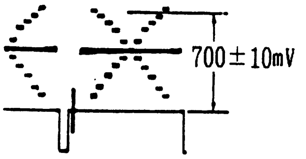
Equipment: Waveform Monitor	Board: EN-79P board

- Preparation

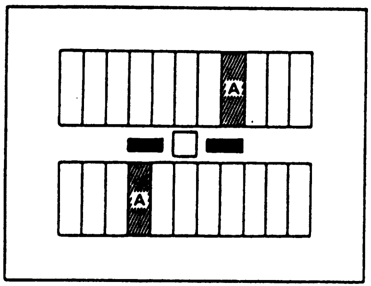
- To be extended; EN-79P board
- S3 (Y/G SELECT) / EN-79P: ENC
- ZEBRA sw (viewfinder): ON
- Shoot the gray scale chart in full underscan's picture frame by zooming a lens.
- S5 (WHITE CLIP & KNEE ON/OFF) / PR-176: OFF

- Adjustment procedures

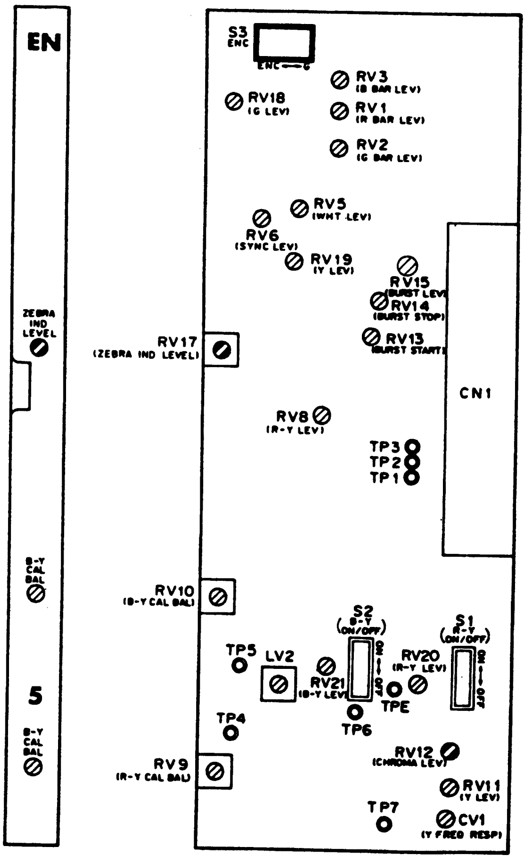
1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV



2. • Test point : VIEWFINDER
   • Adj. point : ⊘ RV17/EN-79P (ZEBRA IND LEVEL)
   • Spec. : Adjust so that a striped pattern appears at portions A.



(Viewfinder screen)


EN
ZEBRA IND LEVEL
B-Y CAL BAL
5
B-Y CAL BAL
S3 ENC
RV3 (B BAR LEV)
RV18 (G LEV)
RV1 (R BAR LEV)
RV2 (G BAR LEV)
RV5 (WHT LEV)
RV6 (SYNC LEV)
RV19 (Y LEV)
RV15 (BURST LEV)
RV14 (BURST STOP)
RV17 (ZEBRA IND LEVEL)
RV13 (BURST START)
CN1
RV8 (R-Y LEV)
TP3
TP2
TP1
RV10 (B-Y CAL BAL)
S2 (B-Y ON/OFF)
S1 (R-Y ON/OFF)
TP5
LV2
RV21 (B-Y LEV)
RV20 (R-Y LEV)
TPE
TP4
TP6
RV9 (R-Y CAL BAL)
RV12 (CHROMA LEV)
RV11 (Y LEV)
TP7
CV1 (Y FREQ RESP)

EN-79P BOARD (PANEL SIDE)　　EN-79P BOARD(COMPONENT SIDE)

7-5. DETAIL SIGNAL SYSTEM ADJUSTMENT

7-5-1. White Clip Adjustment

- Setting

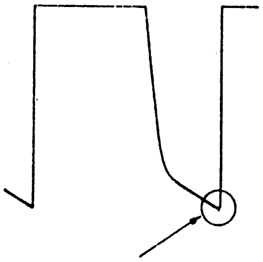
Equipment: Dualtrace Oscilloscope	Board: IE-30P board

- Preparation

- To be extended; IE-30P board
- S3 (Y/G SELECT)/EN-79P: ENC
- S1 (DTL ON/OFF)/IE-30P: ON
- GAIN selector (side panel): 18
- S3 (TEST SAW)/SG-152AP: ON
- S5 (KNEE/W CLIP)/PR-176: ON

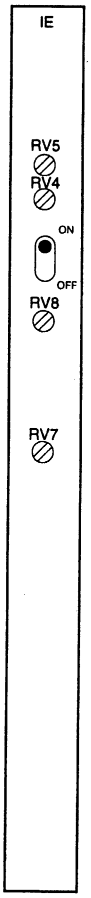
- Adjustment procedures

- Test point : TP45/Extension board
- Adj. point : ● RV1 (MOD WHITE CLIP) /IE-30P
- Spec. :

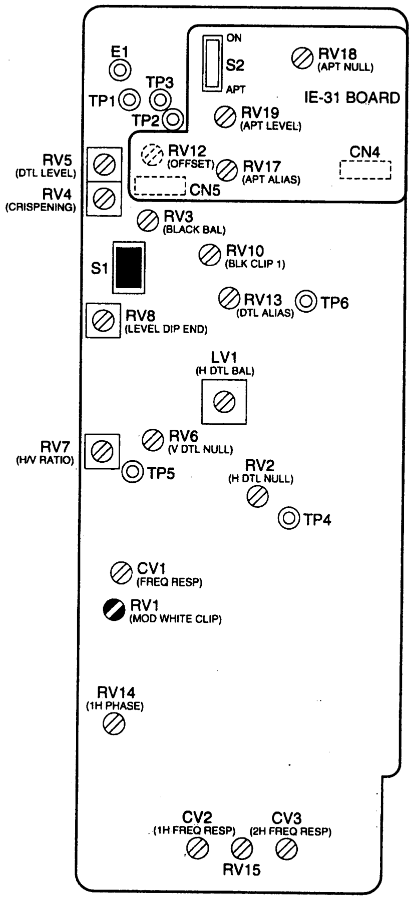


Adjust so that the peak value of the test waveform reaches just before the clipping point.

TRIG: HD (TP16/Extension board)


IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD (PANEL SIDE)


ON
E1
S2
RV18 (APT NULL)
TP3
APT
TP1
IE-31 BOARD
TP2
RV19 (APT LEVEL)
RV5 (DTL LEVEL)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN4
RV4 (CRISPENING)
CN5
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV13 (DTL ALIAS)
TP6
RV8 (LEVEL DIP END)
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, set the GAIN selector (side panel) to 0.

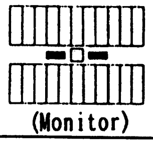
7-5-2. V DTL Null Adjustment

• Setting

Equipment: Dualtrace Oscilloscope	Board: IE-30P board

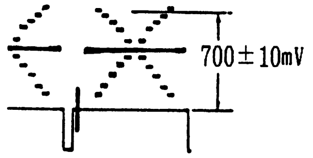
• Preparation

- To be extended; IE-30P board
- S3 (Y/G SELECT) / EN-79P: ENC
- S1 (DTL ON/OFF) / IE-30P: ON
- Shoot the gray scale chart in full underscan's picture frame of the monitor by zooming a lens.

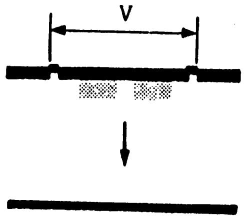


• Adjustment procedures

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV (WHITE LEVEL)

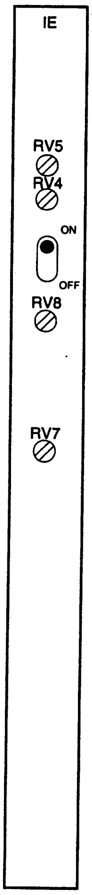


2. • Test point : TP5/IE-30P
   • Adj. point : ⊘ RV6/ (VDTL NULL)/IE-30P
   • Spec. :

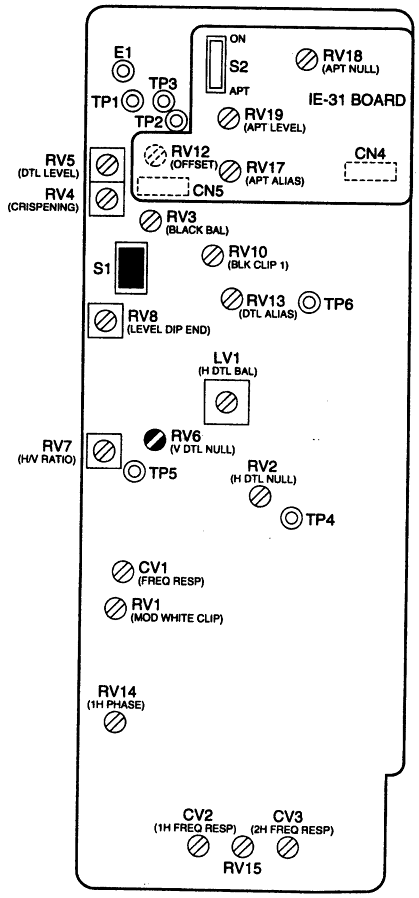


Make flat.

TRIG: VD (TP17/Extension board)


IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD (PANEL SIDE)


ON
S2
APT
RV18 (APT NULL)
E1
TP3
TP1
TP2
RV19 (APT LEVEL)
IE-31 BOARD
RV5 (DTL LEVEL)
RV4 (CRISPENING)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN4
CN5
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV13 (DTL ALIAS)
TP6
RV8 (LEVEL DIP END)
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

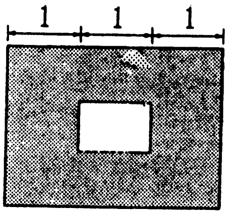
7-5-3. H DTL NULL Adjustment

- **Setting**

Equipment: Dualtrace Oscilloscope	Board: IE-30P board

- **Preparation**

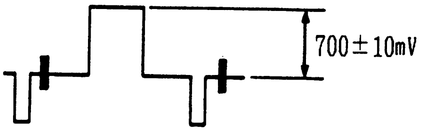
- To be extended; IE-30P board
- S3 (Y/G SELECT) / EN-79P: ENC
- S1 (DTL ON/OFF)/IE-30P: ON
- Shoot the white window chart using a zoom lens as illustrated below.



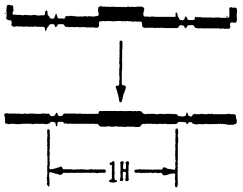
(Monitor)

- **Adjustment procedures**

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV (WHITE LEVEL)

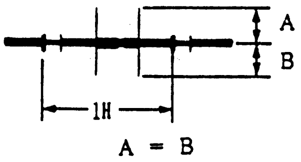


2. • Test point : TP4/IE-30P
   • Adj. point : ⊘ RV2 (H DTL NULL) /IE-30P

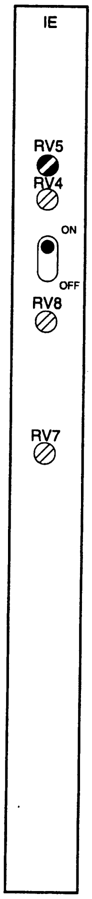


Make flat.
TRIG: HD (TP16/Extension board)

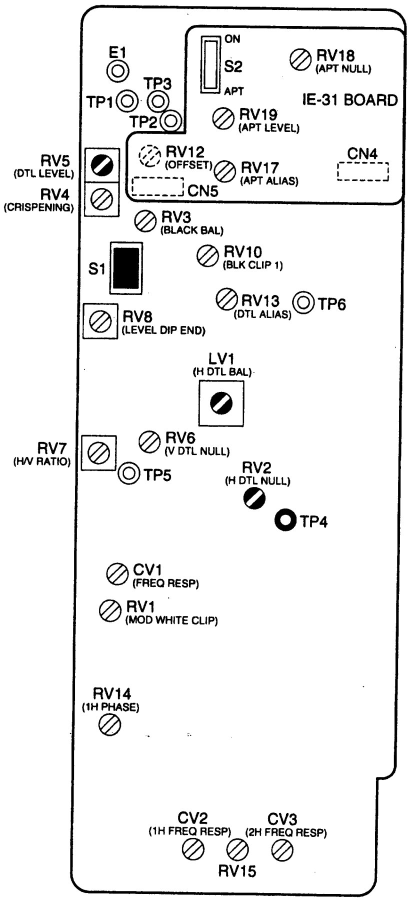
3. • RV5 (DTL LEVEL)/IE-30P: Fully turn clockwise
4. • Test point : TP4/IE-30P
   • Adj. point : ⊘ LV1 (H DTL BAL) /IE-30P
   • Spec. : A = B



TRIG: HD (TP16/Extension board)


IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


ON
E1
S2
RV18
(APT NULL)
TP3
TP1
APT
IE-31 BOARD
TP2
RV19
(APT LEVEL)
RV12
(OFFSET)
RV5
(DTL LEVEL)
RV17
(APT ALIAS)
CN4
CN5
RV4
(CRISPENING)
RV3
(BLACK BAL)
RV10
(BLK CLIP 1)
S1
RV13
(DTL ALIAS)
TP6
RV8
(LEVEL DIP END)
LV1
(H DTL BAL)
RV6
(V DTL NULL)
RV7
(H/V RATIO)
TP5
RV2
(H DTL NULL)
TP4
CV1
(FREQ RESP)
RV1
(MOD WHITE CLIP)
RV14
(1H PHASE)
CV2
(1H FREQ RESP)
CV3
(2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

- **Note**

- After adjustment is completed, perform the 7-5-4 Black Balance Adjustment.

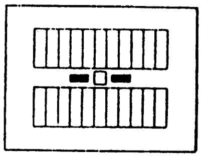
7-5-4. Black Balance Adjustment

- Setting

Equipment: Dualtrace Oscilloscope	Board: IE-30P board

- Preparation

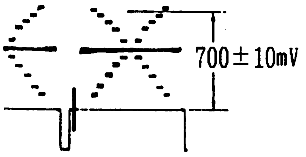
- To be extended; IE-30P board
- S3 (Y/G SELECT) / EN-79P: ENC
- S1 (DTL ON/OFF) / IE-30P: ON
- Turn RVs on the IE-30P board as follows:
  - ⊘RV4 (CRISPENING) : Fully clockwise
  - ⊘RV5 (DTL LEVEL) : Fully clockwise
  - ⊘RV8 (LEVEL DEPEND) : Fully counterclockwise
  - ⊘RV7 (H/V RATIO) : mechanical center
- Shoot the gray scale chart in full underscan's picture frame by zooming a lens.



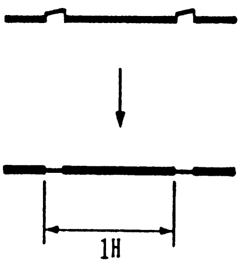
(Monitor)

- Adjustment procedures

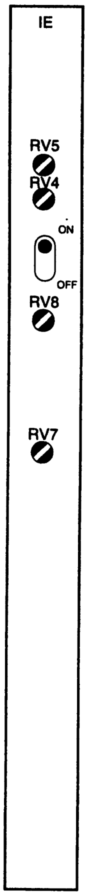
1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV (WHITE LEVEL)



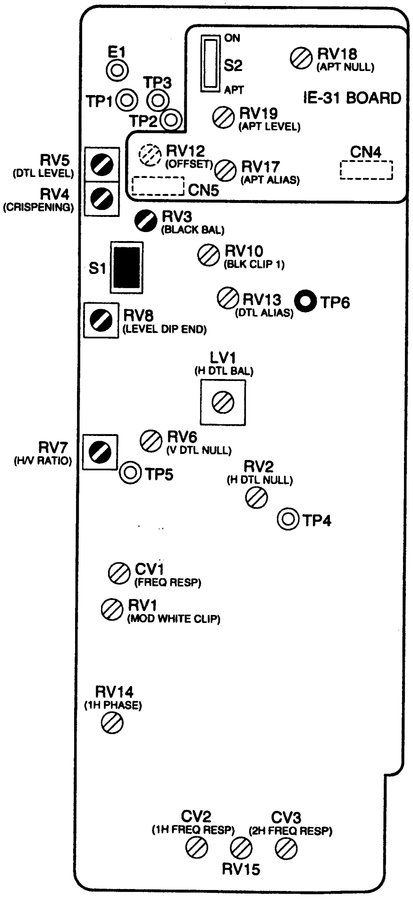
2. • Test point : TP6/IE-30P
   • Adj. point : ⊘ RV3 (BLACK BAL) / IE-30P
   • Spec. :



Make flat.
TRIG: HD (TP16/Extension board)


IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


E1
TP1
TP3
TP2
ON
S2
APT
RV18 (APT NULL)
IE-31 BOARD
RV19 (APT LEVEL)
RV5 (DTL LEVEL)
RV4 (CRISPENING)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN4
CN5
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV13 (DTL ALIAS)
TP6
RV8 (LEVEL DIP END)
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, perform the 7-5-10 Level Dependent Adjustment.

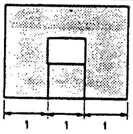
7-5-5. Aperture Null Adjustment

- Setting

Equipment: Dualtrace Oscilloscope	Board: IE-30P board

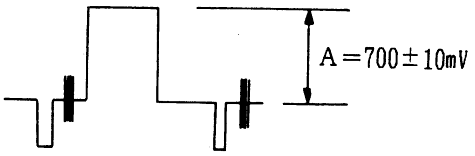
- Preparation

- To be extended; IE-30P board
- S1 (DTL ON/OFF) / IE-30P: OFF
- S2 (APERTURE) / IE-30P: ON
- Shoot the white window chart using a zoom lens as illustrated below.

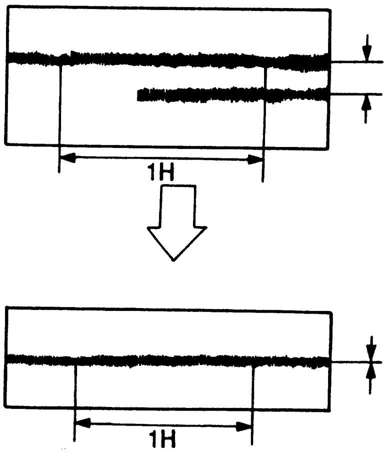


- Adjustment procedures

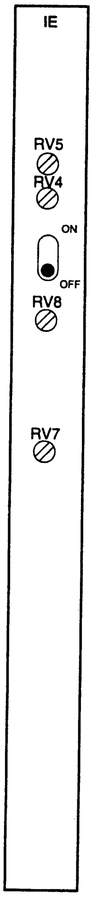
1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : A = 700 ± 10mV



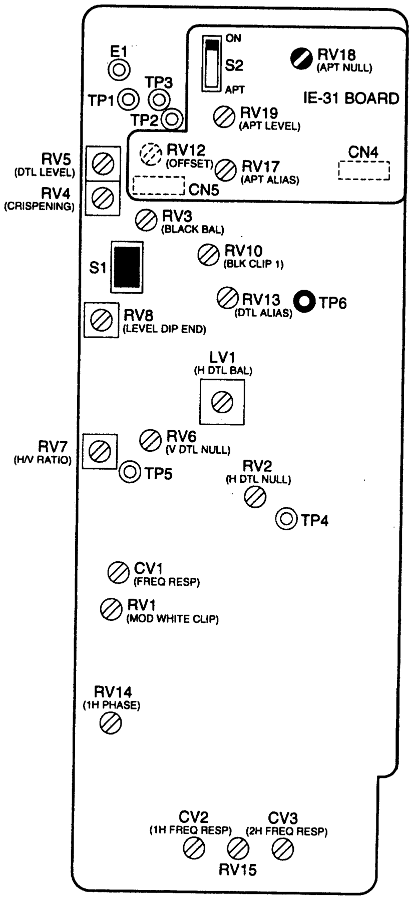
2. • Test point : TP6/IE-30P
   • Adj. point : ⊘ RV18/IE-31
   • Spec. : Obtain a flat waveform



TRIG:HD (TP16/Extension board)


IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


ON
S2
APT
RV18
(APT NULL)
E1
TP3
TP1
TP2
IE-31 BOARD
RV19
(APT LEVEL)
RV5
(DTL LEVEL)
RV4
(CRISPENING)
RV12
(OFFSET)
RV17
(APT ALIAS)
CN4
CN5
RV3
(BLACK BAL)
S1
RV10
(BLK CLIP 1)
RV13
(DTL ALIAS)
TP6
RV8
(LEVEL DIP END)
LV1
(H DTL BAL)
RV7
(H/V RATIO)
RV6
(V DTL NULL)
TP5
RV2
(H DTL NULL)
TP4
CV1
(FREQ RESP)
RV1
(MOD WHITE CLIP)
RV14
(1H PHASE)
CV2
(1H FREQ RESP)
CV3
(2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

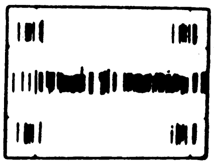
7-5-6. Resolution Adjustment

- **Setting**

Equipment: Waveform Monitor	Board: VA-104 board

- **Preparation**

- Shoot the multi-burst chart in full underscan's picture frame by zooming a lens.
- S1 (DTL ON/OFF)/IE-30P: OFF
- S2 (APERTURE)/IE-30P: OFF
- Pan so that the 8.9 MHz of the multi-burst chart is positioned at center on the monitor screen.

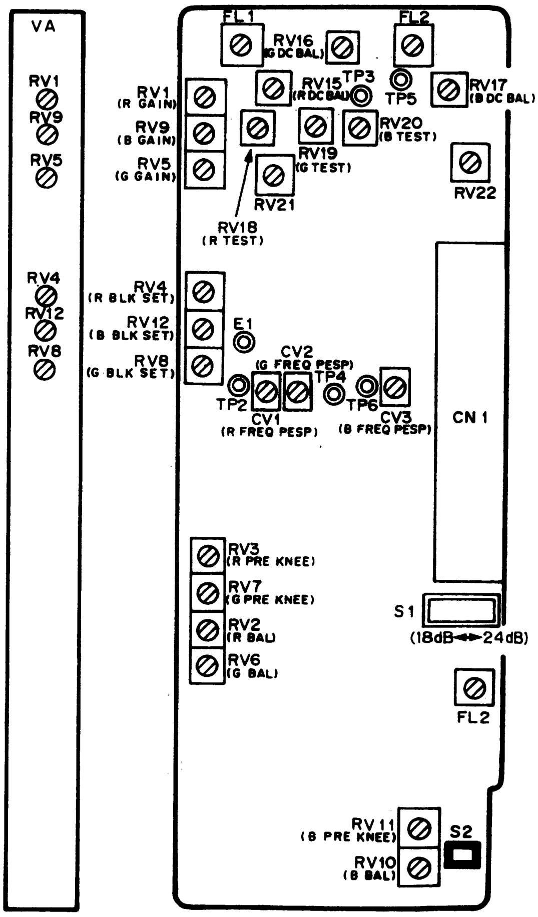


(Monitor)

- **Adjustment procedures**

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV

2. • Test point : Monitor
   • Adj. point : S2 (SHD π PHASE)/VA-104
   • Spec. : 1. Slightly pan the camera so that the resolution is optimum.
   2. Adjust so that the resolution is maximized.
   3. Repeat Steps 1 and 2 so that the resolution is more than 700 TV lines.


VA
RV1
RV9
RV5
RV4
RV12
RV8
FL1
FL2
RV16 (G DC BAL)
RV1 (R GAIN)
RV9 (B GAIN)
RV5 (G GAIN)
RV15 (R DC BAL)
TP3
TP5
RV17 (B DC BAL)
RV20 (B TEST)
RV19 (G TEST)
RV21
RV22
RV18 (R TEST)
RV4 (R BLK SET)
RV12 (B BLK SET)
RV8 (G BLK SET)
E1
CV2 (G FREQ PESP)
TP4
TP2
TP6
CV1 (R FREQ PESP)
CV3 (B FREQ PESP)
CN 1
RV3 (R PRE KNEE)
RV7 (G PRE KNEE)
RV2 (R BAL)
RV6 (G BAL)
S1
(18dB◄►24dB)
FL2
RV11 (B PRE KNEE)
RV10 (B BAL)
S2

VA-104 BOARD (PANEL SIDE)

VA-104 BOARD (COMPONENT SIDE)

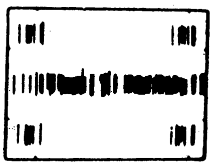
7-5-7. Aperture Alias Adjustment

- Setting

Equipment: Waveform Monitor	Board: IE-30P board

- Preparation

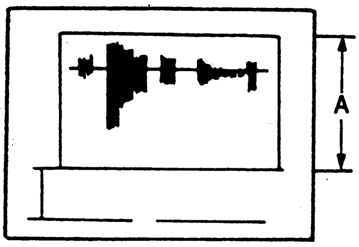
- To be extended; IE-30P board
- S1 (DTL ON/OFF)/IE-30P: OFF
- S2 (APERTURE)/IE-30P: ON
- Shoot the multi-burst chart using a zoom lens.
- Pan so that the 8.9 MHz of the multi-burst chart is positioned at center on the monitor screen.



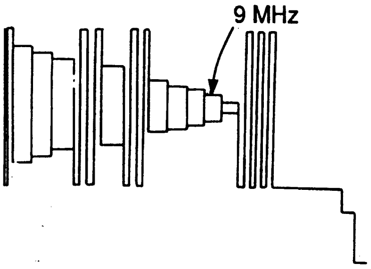
(Monitor)

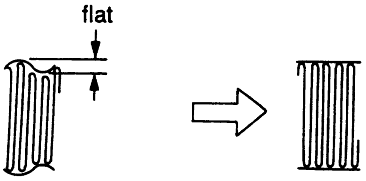
- Adjustment procedures

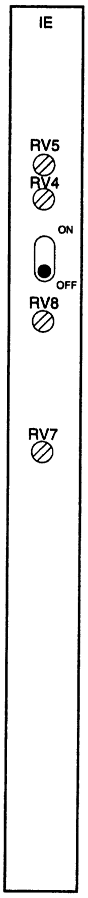
1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : A = 640 ± 10mV



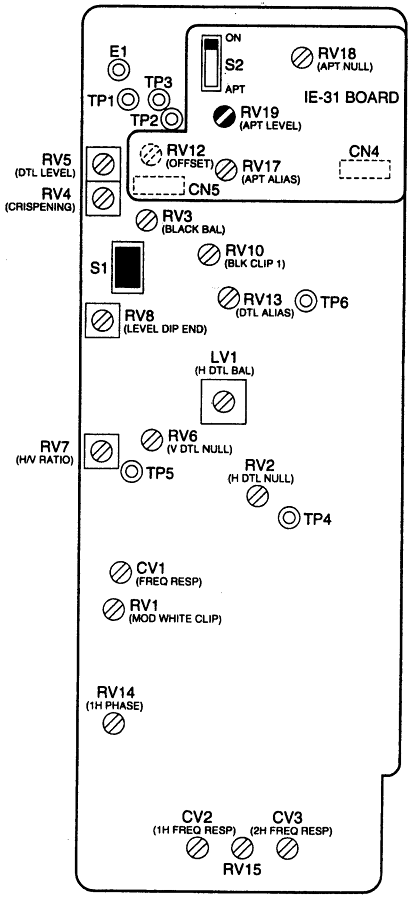
2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘ RV19(APT ALIAS)/ IE-30P (IE-31)
   • Spec. : Adjust so that the 9 MHz signal of multi-burst chart becomes horizontally flat.






IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD (PANEL SIDE)


E1
TP3
TP1
TP2
ON
S2
APT
RV18 (APT NULL)
IE-31 BOARD
RV19 (APT LEVEL)
RV5 (DTL LEVEL)
RV4 (CRISPENING)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN4
CN5
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV13 (DTL ALIAS)
TP6
RV8 (LEVEL DIP END)
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

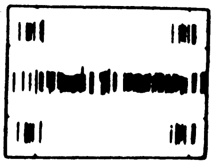
IE-30/P BOARD (COMPONENT SIDE)

7-5-8. DTL Alias Adjustment

- Setting

Equipment: Waveform monitor	Board: IE-30P board

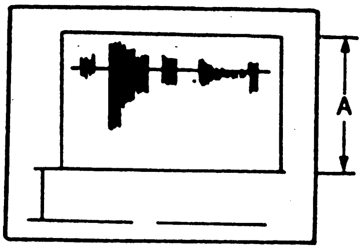
- Preparation


(Monitor)

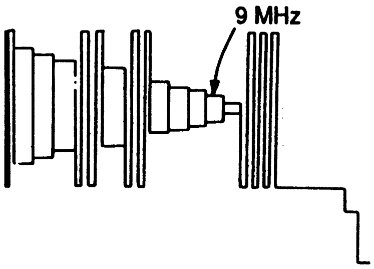
- To be extended; IE-30P board
- S1 (DTL ON/OFF) switch / IE-30P board: ON
- S2 (APERTURE) / switch / IE-31 board: OFF
- ⊘RV5 (DTL LEVEL) / IE-30P board → fully clockwise
- ⊘RV7 (H/V RATIO) / IE-30P board fully clockwise
- Lens Zoom : Underscanned picture frame on the monitor = chart frame
- Pan so that the 9MHz of the multi-burst chart is positioned at center on the monitor screen.

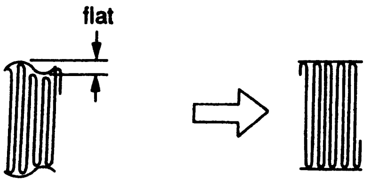
- Adjustment procedures

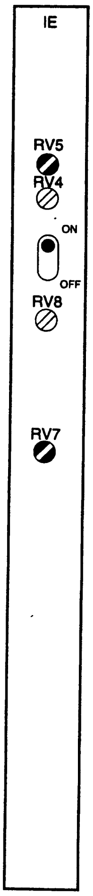
1. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV13 (DTL ALIAS) / IE-30P
   • Spec. : A = 700 ± 10mV



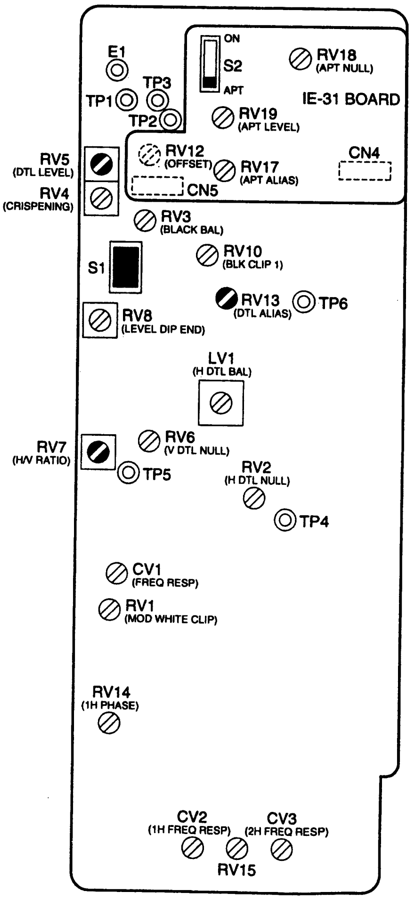
2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV13 (DTL ALIAS) / IE-30P
   • Spec. : Adjust so that the 9MHz signal of multi-burst chart becomes horizontally flat.






IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


E1
ON
S2
APT
RV18
(APT NULL)
TP3
TP1
TP2
RV19
(APT LEVEL)
IE-31 BOARD
RV5
(DTL LEVEL)
RV4
(CRISPENING)
RV12
(OFFSET)
RV17
(APT ALIAS)
CN4
CN5
RV3
(BLACK BAL)
RV10
(BLK CLIP 1)
S1
RV13
(DTL ALIAS)
TP6
RV8
(LEVEL DIP END)
LV1
(H DTL BAL)
RV7
(H/V RATIO)
RV6
(V DTL NULL)
TP5
RV2
(H DTL NULL)
TP4
CV1
(FREQ RESP)
RV1
(MOD WHITE CLIP)
RV14
(1H PHASE)
CV2
(1H FREQ RESP)
CV3
(2H FREQ RESP)
RV15

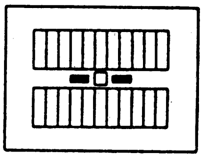
IE-30/P BOARD (COMPONENT SIDE)

7-5-9. Crispening Adjustment

- Setting

Equipment: Waveform Monitor	Board: IE-30P board

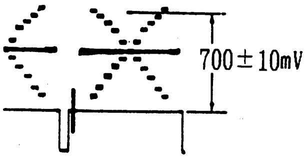
- Preparation
  - To be extended; IE-30P board
  - S1 (DTL ON/OFF) switch / IE-30P board: ON
  - ⊘RV8 (LEV DEP) / IE-30P board → fully counterclock wise
  - ⊘RV7 (H/V RATIO) / IE-30P board → fully counterclock wise
  - Shoot the gray scale chart in full underscan's picture frame by zooming a lens.



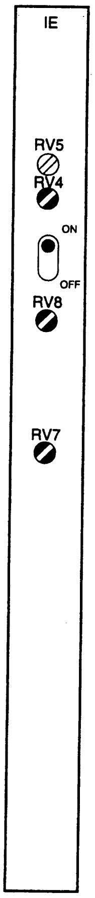
(Monitor)

- Adjustment procedures

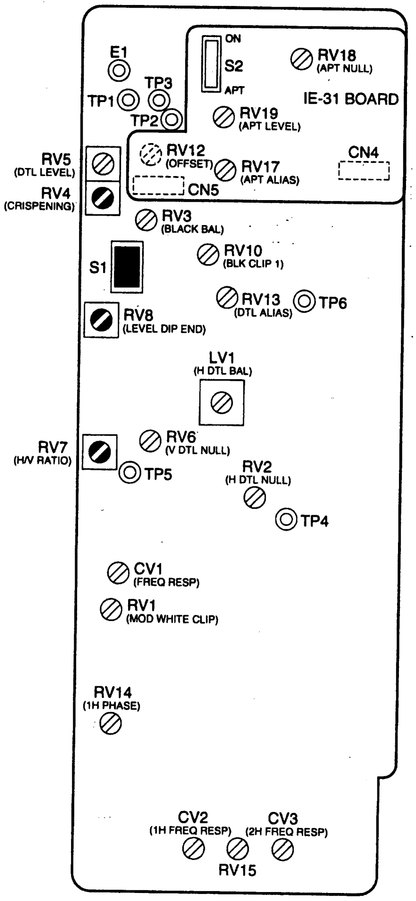
1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV (WHITE LEVEL)



2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘RV4 (CLISP) / IE-30P board
   • Spec. : Noise of the output waveform on the waveform monitor start to be reduced.


IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


E1
ON
S2
APT
RV18 (APT NULL)
IE-31 BOARD
TP3
TP1
TP2
RV19 (APT LEVEL)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN4
CN5
RV5 (DTL LEVEL)
RV4 (CRISPENING)
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV13 (DTL ALIAS)
TP6
RV8 (LEVEL DIP END)
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

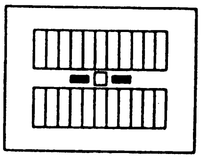
7-5-10. Level Dependent Adjustment

- **Setting**

Equipment: Waveform Monitor	Board: IE-30P board

- **Preparation**

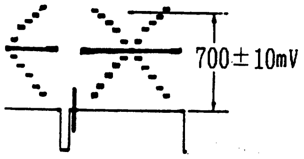
- To be extended; IE-30P board
- S3 (Y/G SELECT) / EN-79P: G
- S1 (DTL ON/OFF) / IE-30P: ON
- Shoot the gray scale chart in full underscan's picture frame by zooming a lens.



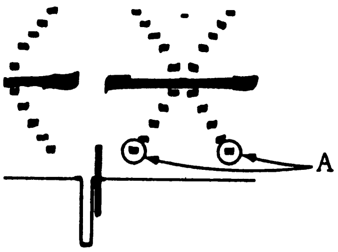
(Monitor)

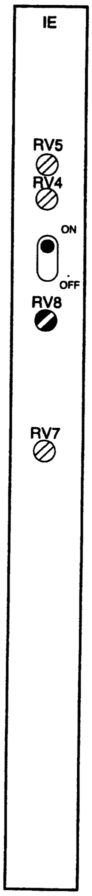
- **Adjustment procedures**

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV (WHITE LEVEL)

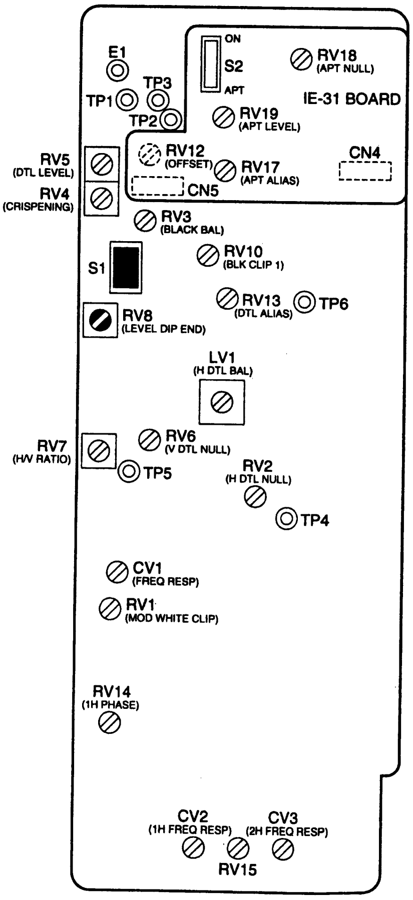


2. • Test point : Waveform Monitor
   • Adj. point : ⊘ RV8 (LEVEL DEPEND) / IE-30P
   • Spec. : The detail signal should not be added to portion A.




IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD (PANEL SIDE)


E1
TP3
TP1
TP2
ON
S2
APT
RV18 (APT NULL)
IE-31 BOARD
RV19 (APT LEVEL)
RV5 (DTL LEVEL)
RV4 (CRISPENING)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN4
CN5
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV13 (DTL ALIAS)
TP6
RV8 (LEVEL DIP END)
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

- **Note**

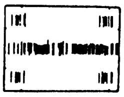
- After adjustment is completed, perform the 7-5-12 H/V RATIO, Detail Level Adjustment.

7-5-11. Aperture Adjustment

- Setting

Equipment: Waveform monitor	Board: IE-30P board

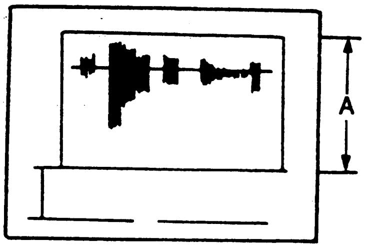
- Preparation
  - To be extended; IE-30P board
  - S1 (DTL ON/OFF) / IE-30P : OFF
  - S2 (APERTURE) / IE-30P : ON
  - Shoot the multi-burst chart using a zoom lens.



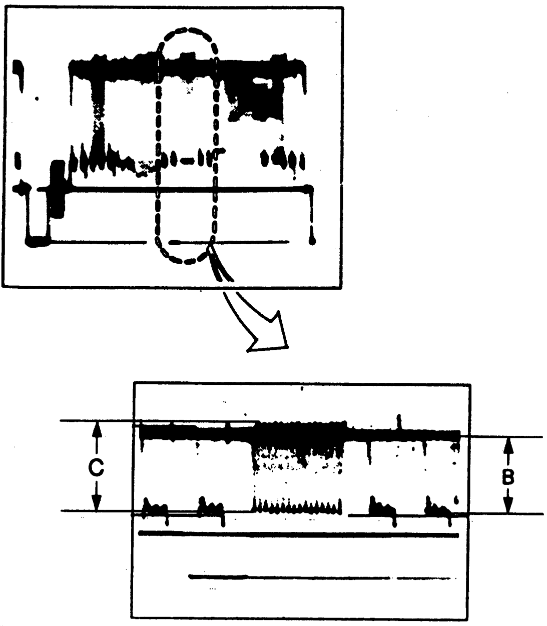
(Monitor)

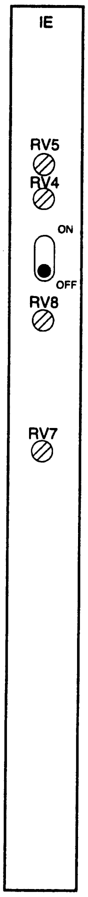
- Adjustment procedures

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : A = 640 ± 10mV

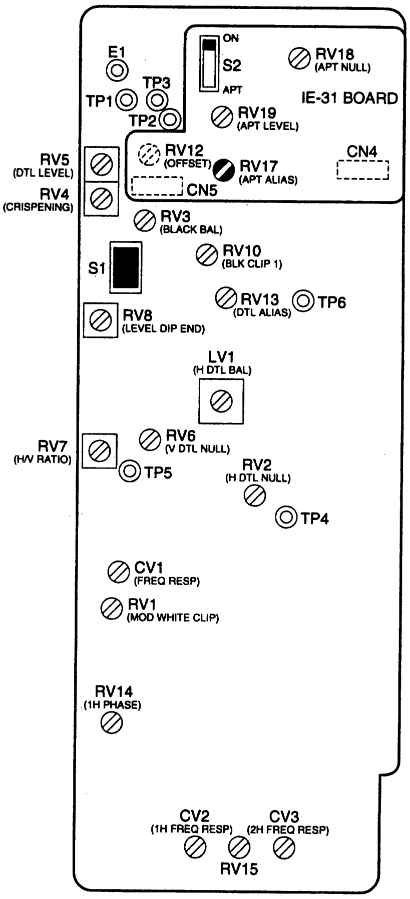


2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘ RV17 (APT LEVEL)/IE-31
   • Spec. : B = C




IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD (PANEL SIDE)


E1
TP3
TP1
TP2
ON
S2
APT
RV18 (APT NULL)
IE-31 BOARD
RV19 (APT LEVEL)
RV12 (OFFSET)
RV17 (APT ALIAS)
CN4
CN5
RV5 (DTL LEVEL)
RV4 (CRISPENING)
RV3 (BLACK BAL)
S1
RV10 (BLK CLIP 1)
RV13 (DTL ALIAS)
TP6
RV8 (LEVEL DIP END)
LV1 (H DTL BAL)
RV7 (H/V RATIO)
RV6 (V DTL NULL)
TP5
RV2 (H DTL NULL)
TP4
CV1 (FREQ RESP)
RV1 (MOD WHITE CLIP)
RV14 (1H PHASE)
CV2 (1H FREQ RESP)
CV3 (2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

7-5-12. H/V Ratio, Detail Level Adjustment

- Setting

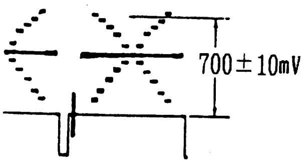
Equipment: Waveform Monitor	Board: IE-30P board

- Preparation

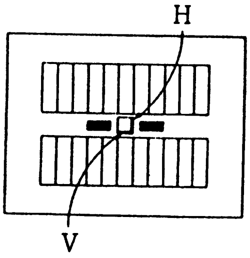
- To be extended; IE-30P board
- S3 (Y/G SELECT)/EN-79P: ENC
- S1 (DTL ON/OFF)/IE-30P: ON
- ⊘RV5 (DTL LEVEL)/IE-30P: Fully turn clockwise.
- Shoot the gray scale chart in full underscan's picture frame by zooming a lens.

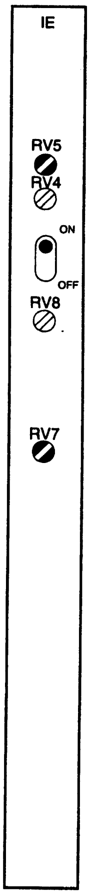
- Adjustment procedures

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 700 ± 10mV (WHITE LEVEL)

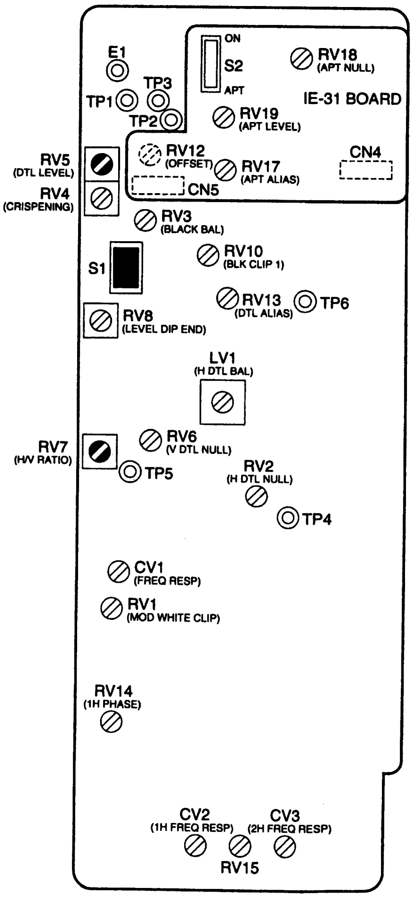


2. • Test point : Monitor
   • Adj. point : ⊘ RV7 (H/V RATIO)/IE-30P
   ⊘ RV5 (DTL LEVEL)/IE-30P
   • Spec. : The ratio of the detail signals which are added in the horizontal and vertical directions should be the same.
   Set the detail level according to the user's request by adjusting.




IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


ON
E1
S2
RV18
(APT NULL)
TP3
APT
TP1
IE-31 BOARD
TP2
RV19
(APT LEVEL)
RV12
(OFFSET)
CN4
RV5
(DTL LEVEL)
RV17
(APT ALIAS)
CN5
RV4
(CRISPENING)
RV3
(BLACK BAL)
RV10
(BLK CLIP 1)
S1
RV13
(DTL ALIAS)
TP6
RV8
(LEVEL DIP END)
LV1
(H DTL BAL)
RV7
(H/V RATIO)
RV6
(V DTL NULL)
TP5
RV2
(H DTL NULL)
TP4
CV1
(FREQ RESP)
RV1
(MOD WHITE CLIP)
RV14
(1H PHASE)
CV2
(1H FREQ RESP)
CV3
(2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

7-5-13. V Detail Black Clip Adjustment

- Setting

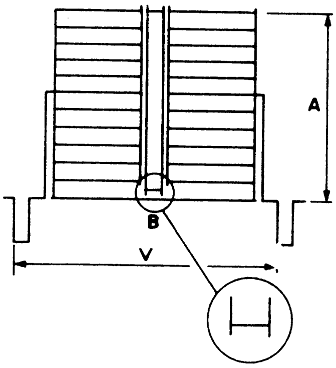
Equipment: Waveform Monitor	Board: IE-30P board

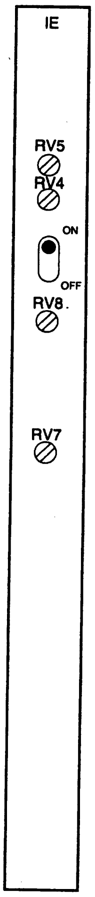
- Preparation

- To be extended; IE-30P board
- S2 (APT ON/OFF)/IE-31: ON
- S1 (DTL ON/OFF)/IE-30P: ON
- Waveform moniter: HORIZONTAL → FIELD (V)
- Shoot the gray scale chart in full underscan's picture frame by zooming a lens.

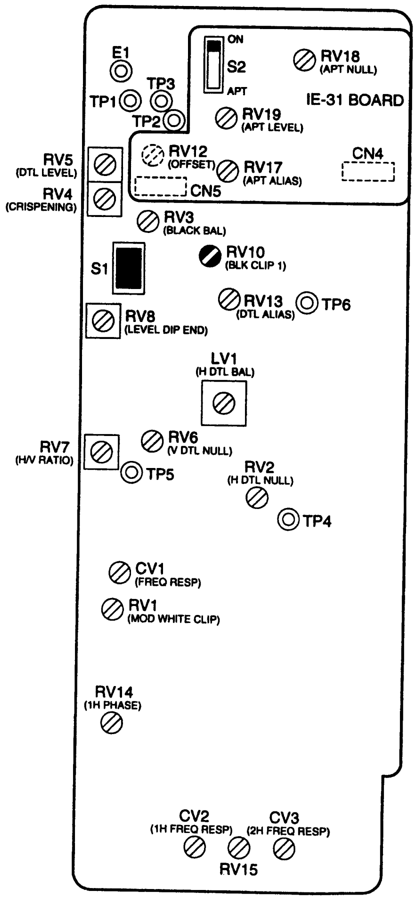
- Adjustment procedures

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 630 ± 14 mV
2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘ RV10 (BLK CLIP1)/IE-30P
   • Spec. : From the position where the volume is fully turned counterclockwise, turn it clockwise until spikes in area "B" are clipped, and then return it a little.




IE
RV5
RV4
ON
OFF
RV8
RV7

IE-30/P BOARD
(PANEL SIDE)


E1
TP3
TP1
TP2
ON
S2
APT
RV18
(APT NULL)
IE-31 BOARD
RV19
(APT LEVEL)
RV5
(DTL LEVEL)
RV4
(CRISPENING)
RV12
(OFFSET)
RV17
(APT ALIAS)
CN4
CN5
RV3
(BLACK BAL)
S1
RV10
(BLK CLIP 1)
RV13
(DTL ALIAS)
TP6
RV8
(LEVEL DIP END)
LV1
(H DTL BAL)
RV7
(H/V RATIO)
RV6
(V DTL NULL)
TP5
RV2
(H DTL NULL)
TP4
CV1
(FREQ RESP)
RV1
(MOD WHITE CLIP)
RV14
(1H PHASE)
CV2
(1H FREQ RESP)
CV3
(2H FREQ RESP)
RV15

IE-30/P BOARD (COMPONENT SIDE)

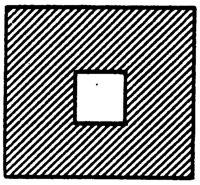
7-5-14. Streaking Adjustment

- Setting

Equipment:	Board: PA-155 board

- Preparation

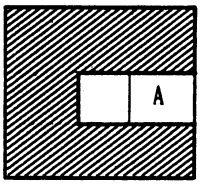
- Shoot the white window chart using a zoom lens.
- Set the iris control to F5. 6–4.
- GAIN selector (side panel): 18



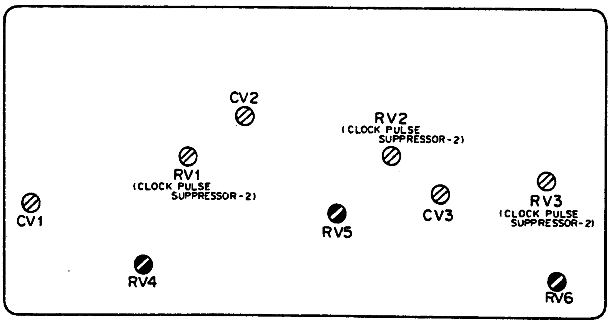
(Monitor)

- Adjustment procedures

- Test point : Color Monitor
- Adj. point : ⊘ RV6 (R STREAKING)/PA-155
  : ⊘ RV4 (B STREAKING)/PA-155
  : ⊘ RV5 (G STREAKING)/PA-155
- Spec. : Streaking at portion A should be decrease.



(NOTE) Not fix the RV4, 5 and 6 at the fully counterclockwise.


CV2
RV2
(CLOCK PULSE SUPPRESSOR-2)
RV1
(CLOCK PULSE SUPPRESSOR-2)
CV1
RV5
CV3
RV3
(CLOCK PULSE SUPPRESSOR-2)
RV4
RV6

PA-155 BOARD (SOLDERING SIDE)

7-6. AUTO CONTROL SYSTEM ADJUSTMENT

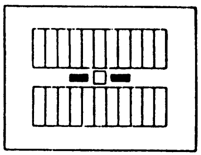
7-6-1. Auto Iris Adjustment

- Setting

Equipment: Waveform Monitor	Board: SG-152AP board

- Preparation

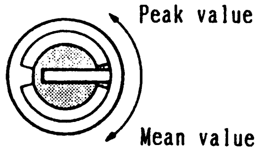
- Iris AUTO/MANU (lens) sw: AUTO
- OUTPUT/DCC sw (side panel): CAM/ON
- Shoot the gray scale chart in full underscan's picture frame by zooming a lens.



(Monitor)

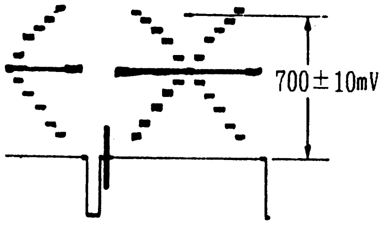
- Adjustment procedures

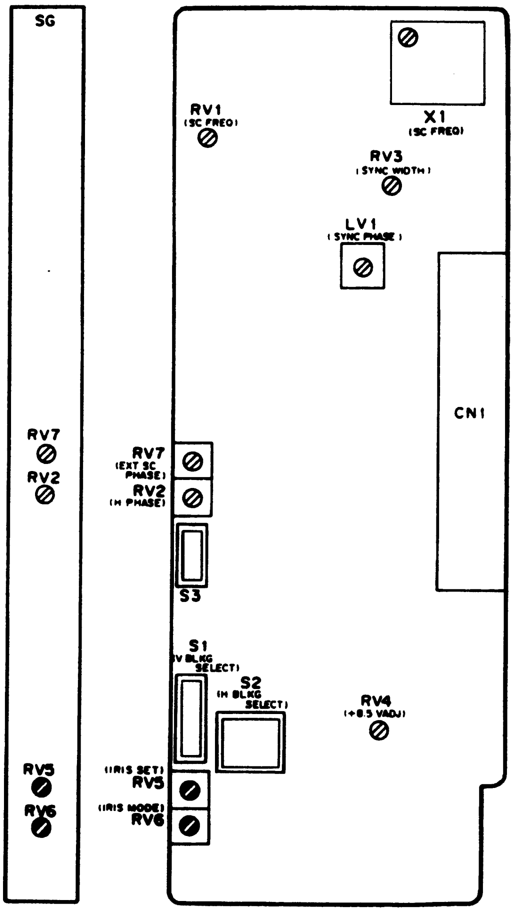
1. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘ RV6 (IRIS MODE)/ SG-152AP
   • Spec. : Using RV6 (IRIS MODE) on the SG-152AP board, the auto iris mode can be set between the video signal's mean value-based operation (fully turned clockwise) and peak value-based operation (fully turned counterclockwise). The mode can be set as required.
   RV6 is usually set to the center position.


Peak value
Mean value

RV6
(IRIS MODE)

2. • Test point : VIDEO OUT Terminal
   • Adj. point : ⊘ RV5 (IRIS SET)/ SG-152AP
   • Spec. : 700 ± 10mV (WHITE LEVEL)




SG
RV7
RV2
RV5
RV6
RV1
(SC FREQ)
X1
(SC FREQ)
RV3
(SYNC WIDTH)
LV1
(SYNC PHASE)
CN1
RV7
(EXT SC PHASE)
RV2
(H PHASE)
S3
S1
(V BLKG SELECT)
S2
(H BLKG SELECT)
RV4
(+0.5 VADJ)
(IRIS SET)
RV5
(IRIS MODE)
RV6

SG-152/AP BOARD (PANEL SIDE)   SG-152/AP BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, set the iris (AUTO/MANU) (lens) switch to MANU.

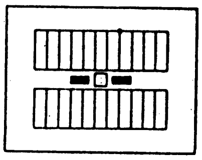
7-6-2. Low Video Adjustment

- Setting

Equipment: Waveform Monitor	Board: AT-49B board

- Preparation

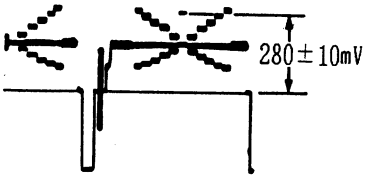
- S3 (Y/G SELECT)/ EN-79P: ENC.
- Shoot the gray scale chart in full underscan's picture frame by zooming a lens.



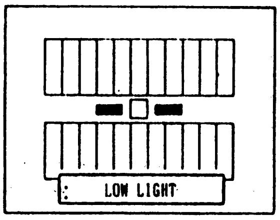
(Monitor)

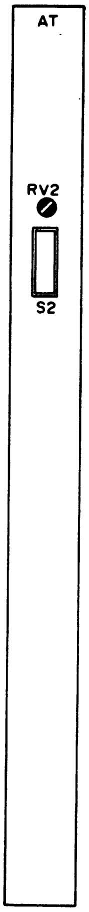
- Adjustment procedures

1. • Test point : VIDEO OUT Terminal
   • Adj. point : Iris control
   • Spec. : 280 ± 10mV (White level)

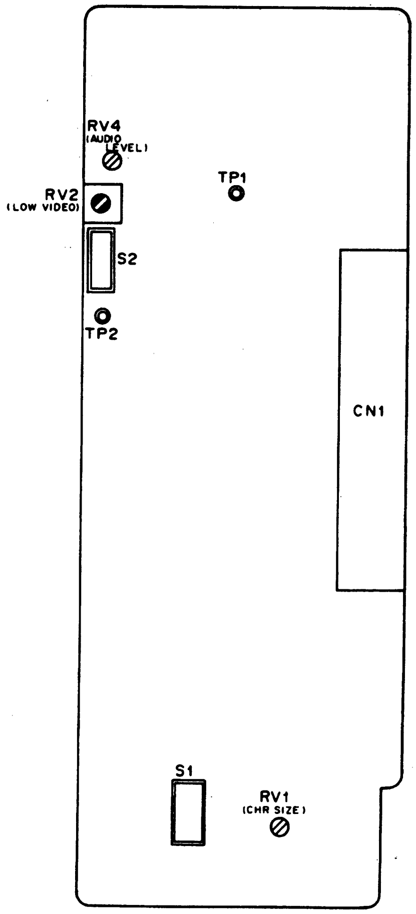


2. • Test point : Viewfinder
   • Adj. point : ⊘ RV2 (LOW VIDEO)/AT-49B
   • Spec. : Turn ⊘ RV2 (LOW VIDEO) on the AT-49B board from fully counterclockwise to clockwise so that "LOW LIGHT" appears on the viewfinder.





AT-49B BOARD
(PANEL SIDE)


RV4
(AUDIO LEVEL)
TP1
RV2
(LOW VIDEO)
S2
TP2
CN1
S1
RV1
(CHR SIZE)

AT-49B BOARD (COMPONENT SIDE)

7-6-3. Character Size Adjustment

- Setting

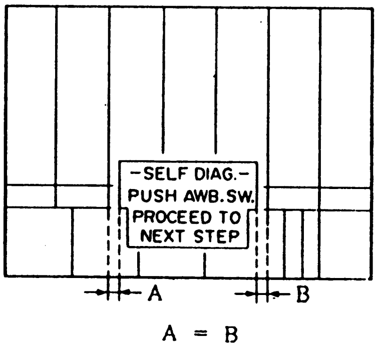
Equipment:	Board: AT-49B board

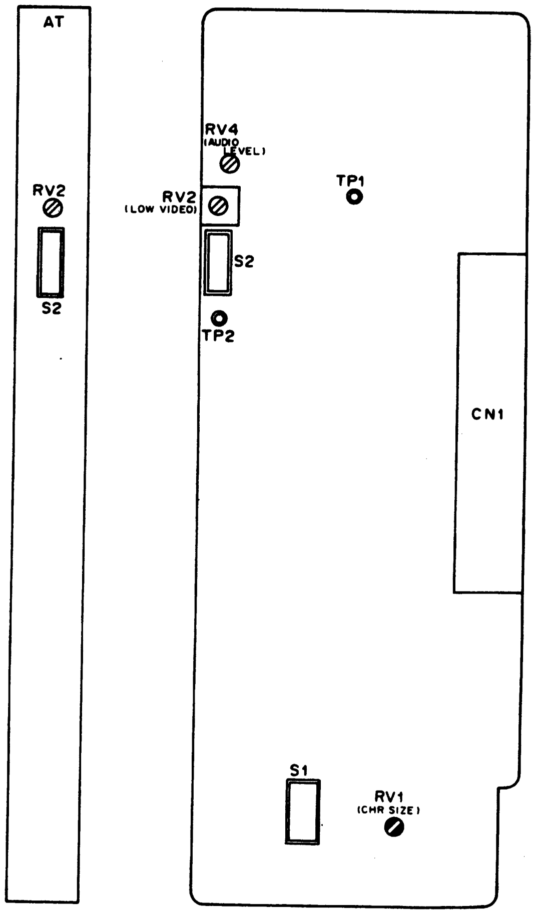
- Preparation

- OUTPUT/DCC sw (side panel): BARS/OFF
- S3 (Y/G SELECT) / SG-152AP: ENC
- S1-2 (CHECK) / AT-49B: ON

- Adjustment procedures

- Test point : Viewfinder
- Adj. point : ⊘ RV1 (CHR SIZE)/AT-49B
- Spec. : Adjust so that the characters on the viewfinder are displayed in the center.


-SELF DIAG.-
PUSH AWB.SW.
PROCEED TO
NEXT STEP
A
B
A = B


AT
RV2
S2
RV4
(AUDIO LEVEL)
RV2
(LOW VIDEO)
S2
TP1
TP2
CN1
S1
RV1
(CHR SIZE)

AT-49B BOARD (PANEL SIDE)

AT-49B BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, set the switches as follows.
  OUTPUT/DCC sw (side panel): CAM/OFF
  S1-2 (CHECK)/AT-49B : OFF

7-6-4. Audio Level Adjustment

- Setting

Equipment: Dualtrace Oscilloscope	Board: AT-49B board

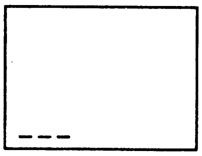
- Preparation

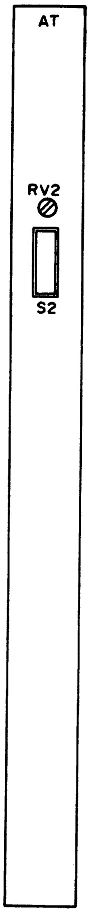
- To be extended; AT-49B board
- Set the AUDIO IN switch of the viewfinder to ON.
- Supply a 1 kHz sine wave signal (0 dBu) to the AUDIO IN CH-1 terminal.
- AUDIO SELECT CH-1 sw (side panel): MAN
- AUDIO IN sw (side panel): LINE

- Adjustment procedures

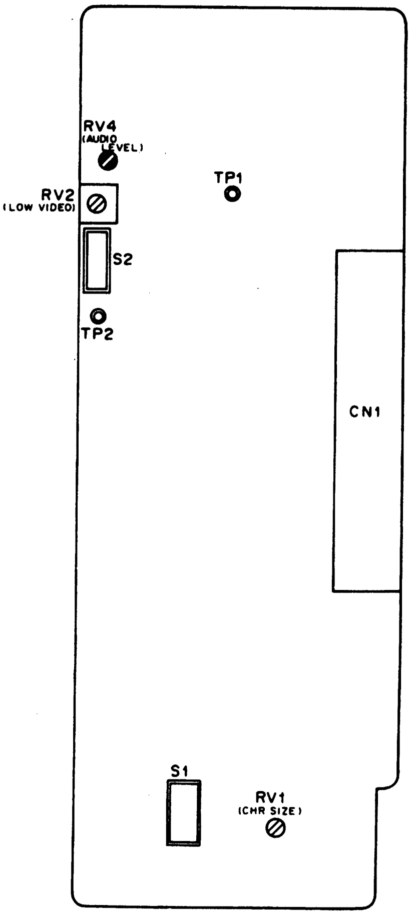
1. • Test point : TP13/Extension board
   • Adj. point : ⊘ AUDIO LEVEL CH-1 control (side panel)
   • Spec. : 0.7 Vp-p

2. • Test point : Viewfinder
   • Adj. point : ⊘ RV4 (AUDIO LEVEL) /AT-49B
   • SPEC. : Gradually turn ⊘ RV4 (AUDIO LEVEL) on the AT-49B board from fully clockwise to counterclockwise so that the third "–" (from the left) appears on the viewfinder.





AT-49B BOARD (PANEL SIDE)



AT-49B BOARD (COMPONENT SIDE)

- Note

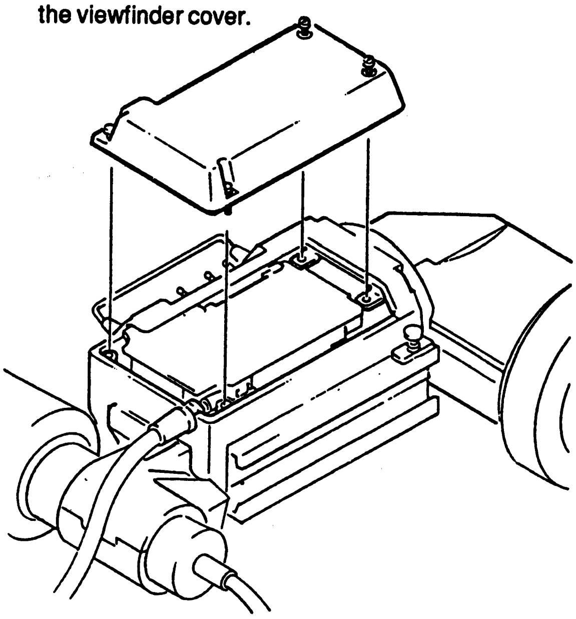
- After adjustment is completed, insert the AT-49B board.

7-7. VIEWFINDER SYSTEM ADJUSTMENT

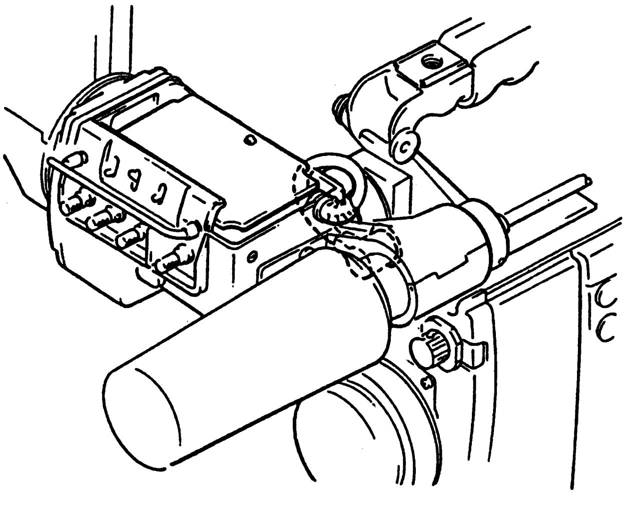
This adjustment should be performed after the camera is adjusted completely.

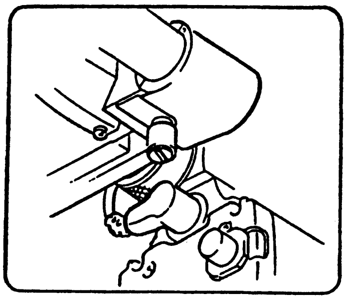
1. Turn OFF The main POWER switch (side panel) before adjustment.

2. Remove the viewfinder from the camera, then remove the viewfinder cover.

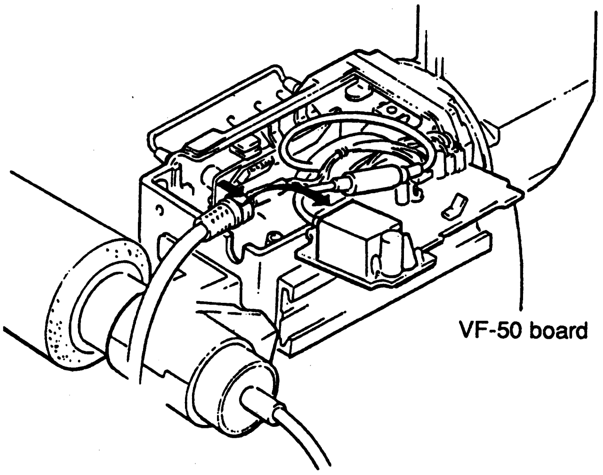


3. Turn the viewfinder upside down and install it.





4. As illustrated below, open the VF-50 board while moving it in the direction of the arrows and open the board so that the component side is placed to the upper position.



5. Set the main POWER switch to ON.

7-7-1. Vertical Hold Adjustment

• Setting

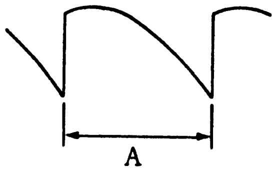
Equipment: Dualtrace Oscilloscope	Board: VF-50 board

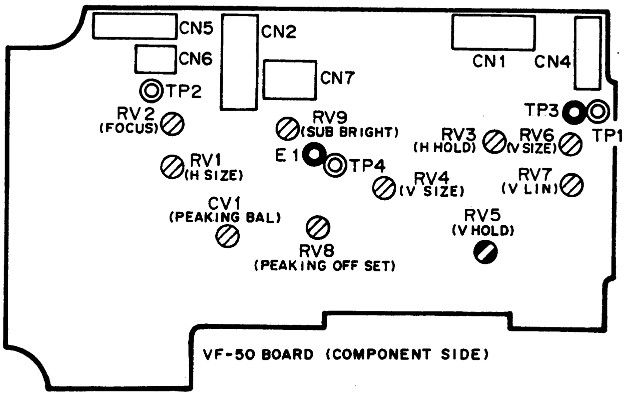
• Preparation

- Extract the EN-79P board from the unit.
- ⊘RV6 (V SIZE)/VF-50: mechanical center
  (When RV6 is marked, it should not be turned.)

• Adjustment procedures

- Test point : TP3/VF-50
  GND E1/VF-50
- Adj. point : ⊘RV5 (V HOLD)/VF-50
- Spec. : A = 25.6 ± 0.5mV




CN5
CN6
CN2
CN7
CN1
CN4
TP2
RV2 (FOCUS)
RV9 (SUB BRIGHT)
TP3
RV3 (H HOLD)
RV6 (V SIZE)
TP1
RV1 (H SIZE)
E1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV5 (V HOLD)
RV8 (PEAKING OFF SET)
VF-50 BOARD (COMPONENT SIDE)

• Note

- After adjustment is completed, install the EN-79U board to the unit.

7-7-2. Horizontal Hold Adjustment

- **Setting**

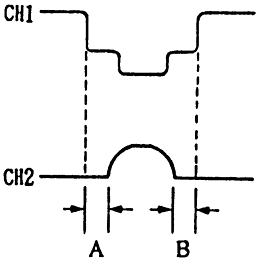
Equipment: Dualtrace Oscilloscope	Board: VF-50 board

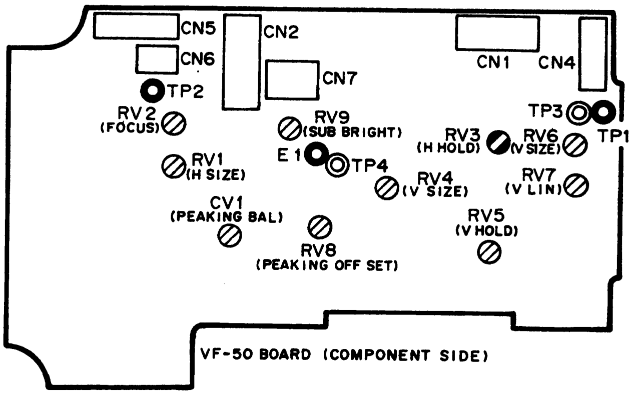
- **Preparation**

- Shoot the 100% white picture frame and set the white level to 100 ± 2 IRE.

- **Adjustment procedures**

- Test point : CH-1. TP2/VF-50
  GND E1
  CH-2. TP1/VF-50
  GND E1
- Adj. point : ⊘ RV3 (H HOLD) /VF-50
- Spec. : A = B





CN5
CN2
CN6
CN7
CN1
CN4
TP2
RV2 (FOCUS)
RV9 (SUB BRIGHT)
TP3
RV3 (H HOLD)
RV6 (V SIZE)
TP1
RV1 (H SIZE)
E1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV5 (V HOLD)
RV8 (PEAKING OFF SET)
VF-50 BOARD (COMPONENT SIDE)

7-7-3. Bright Set Adjustment

- Setting

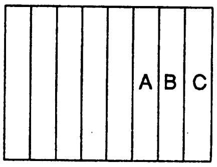
Equipment:	Board: VF-50 board

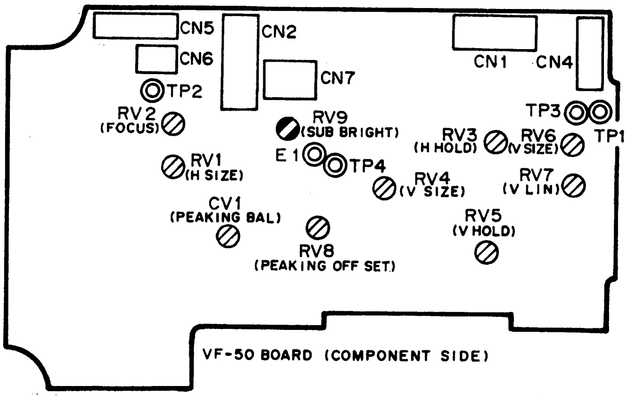
- Preparation

- OUTPUT/DCC switch (side panel) : BARS/OFF.
- BRIGHT control (viewfinder) : Fully turn counter clockwise. ↺
- CONTRAST control (viewfinder) : Fully turn clockwise. ↻

- Adjustment procedures

- Test point : Viewfinder
- Adj. point : ⊘ RV9 (SUB BRIGHT)/VF-50
- Spec. : Adjust ⊘ RV9/VF-50 so that portions A and B on the viewfinder screen can be barely discriminated. And portions B and C cannot be discriminated.




CN5
CN2
CN6
CN7
CN1
CN4
TP2
RV2 (FOCUS)
RV9 (SUB BRIGHT)
TP3
RV3 (H HOLD)
RV6 (V SIZE)
TP1
RV1 (H SIZE)
E1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV5 (V HOLD)
RV8 (PEAKING OFF SET)
VF-50 BOARD (COMPONENT SIDE)

7-7-4. Peaking Balance Adjustment

- Setting

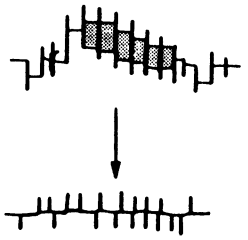
Equipment: Dualtrace Oscilloscope	Board: VF-50 board

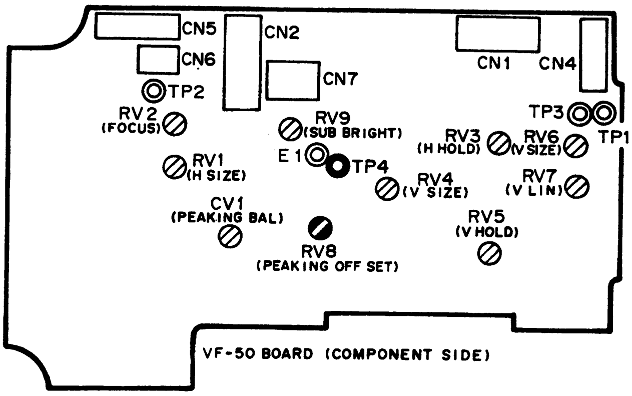
- Preparation

- OUTPUT/DCC switch (side panel) : BARS/OFF

- Adjustment procedures

- Test point : TP4/VF-50
- Adj. point : ⊘ RV8 (PEAKING OFFSET)/VF-50
- Spec. : Only spike noises should appear at TP4.



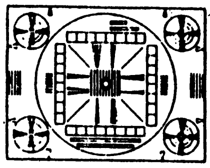

CN5
CN2
CN6
CN7
CN1
CN4
TP2
RV2 (FOCUS)
RV9 (SUB BRIGHT)
TP3
TP1
RV3 (H HOLD)
RV6 (V SIZE)
RV1 (H SIZE)
E1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV5 (V HOLD)
RV8 (PEAKING OFF SET)
VF-50 BOARD (COMPONENT SIDE)

7-7-5. Focus Adjustment

- Setting

Equipment:	Board: VF-50 board

- Preparation

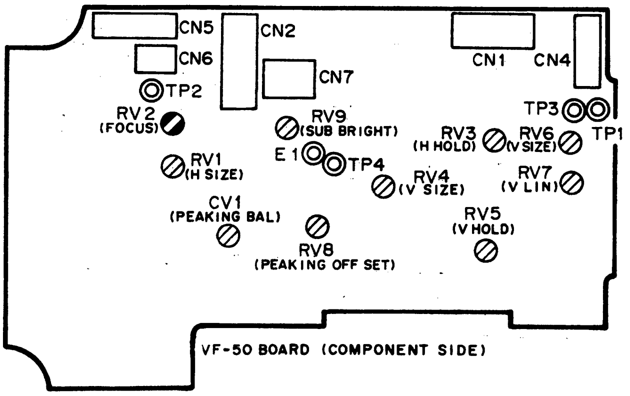


(Viewfinder)

- Shoot the resolution chart in a full picture frame.
- Adjust the iris control so that the output level at the VIDEO OUT terminal is 490 ± 10mV.
- Adjust so that the LENS FOCUS is set to the best focusing point on the black and white monitor.
- BRIGHT and CONTRAST controls of the viewfinder: mechanical center.

- Adjustment procedures

- Test point : Viewfinder
- Adj. point : ● RV2 (FOCUS)/VF-50
- Spec. : Gradually turn ● RV2 (FOCUS) on the VF-50 board from fully counterclockwise to clockwise so that the focus is best. (RV should be turned slowly.)


CN5
CN2
CN6
CN7
CN1
CN4
TP2
RV2 (FOCUS)
RV9 (SUB BRIGHT)
TP3
TP1
RV3 (H HOLD)
RV6 (V SIZE)
E 1
TP4
RV1 (H SIZE)
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV5 (V HOLD)
RV8 (PEAKING OFF SET)
VF-50 BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, check that the focus operation can be performed irrespective of its BRIGHT and CONTRAST controls setting.

7-7-6. Picture Frame Adjustment

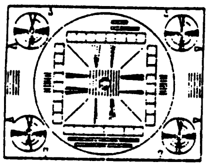
Step 1.

- Setting

Equipment:	Board: VF-50 board

- Preparation

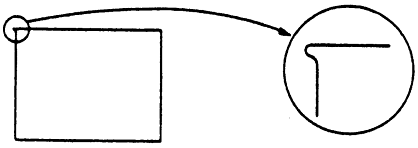
- BRIGHT control (viewfinder) : mechanical center.
- CONTRAST control (viewfinder) : mechanical center.
- PEAKING control (viewfinder) : mechanical center.
- Shoot the resolution chart in a full underscan's picture frame by zooming a lens.

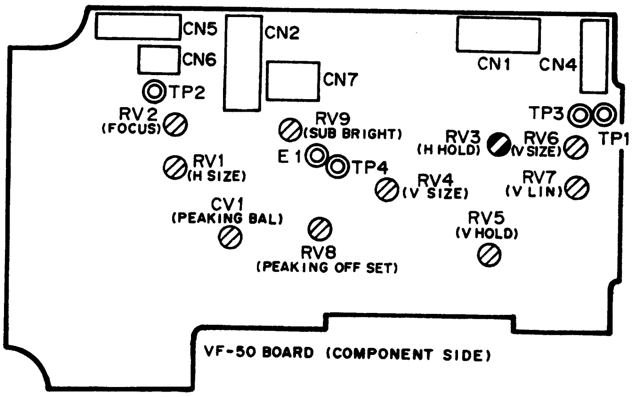


(Monitor)

- Adjustment procedures

- Test point : Viewfinder
- Adj. point : ⊘ RV3 (H HOLD)/VF-50
- Spec. : If the upper left corner of the picture is distorted, make right angle.





CN5
CN2
CN6
CN7
CN1
CN4
TP2
RV2 (FOCUS)
RV9 (SUB BRIGHT)
TP3
TP1
RV3 (H HOLD)
RV6 (V SIZE)
RV1 (H SIZE)
E1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV5 (V HOLD)
RV8 (PEAKING OFF SET)
VF-50 BOARD (COMPONENT SIDE)

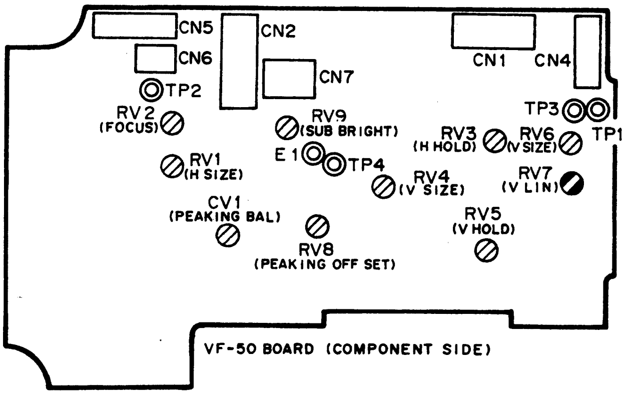
Step 2.

- Setting

Equipment:	Board: VF-50 board

- Adjustment procedures

- Test point : Viewfinder
- Adj. point : ⊘ RV7 (V LIN)/VF-50
- Spec. : Minimize the distortion of the four circles at the four corners of the resolution chart.


CN5
CN2
CN6
CN7
CN1
CN4
TP2
TP3
TP1
RV2 (FOCUS)
RV9 (SUB BRIGHT)
RV3 (H HOLD)
RV6 (V SIZE)
RV1 (H SIZE)
E1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV5 (V HOLD)
RV8 (PEAKING OFF SET)
VF-50 BOARD (COMPONENT SIDE)

Step 3.

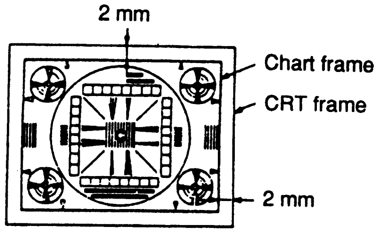
- Setting

Equipment:	Board: VF-50 board

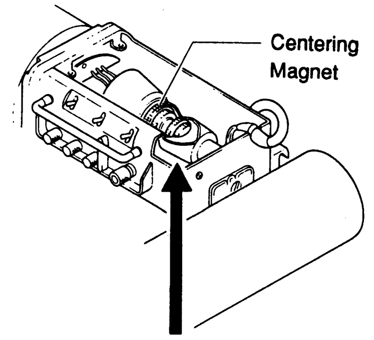
- Adjustment procedures

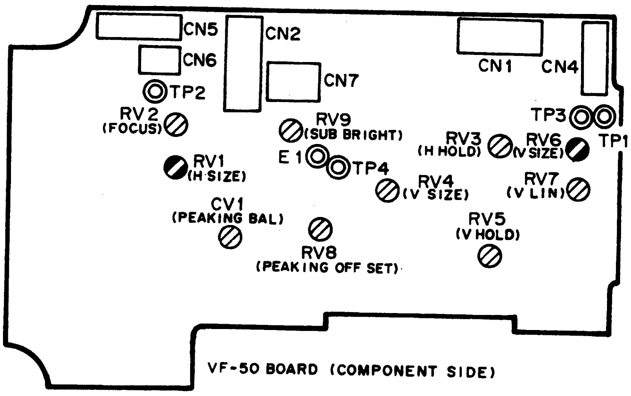
- Test point : Viewfinder
- Adj. point : ⊘ RV1 (H SIZE)/VF-50
  ⊘ RV6 (V SIZE)/VF-50
  ⊘ Centering magnet
- Spec. : Adjust ⊘ RV1 (H SIZE) and ⊘ RV6 (V SIZE) so that the resolution chart is as shown below.
  Turn the centering magnet only when the left and upper corners cannot be adjusted.

(NOTE) When the paint-locked centering magnet is turned, paint-lock it again.

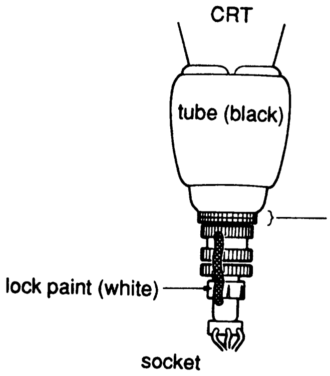

2 mm
Chart frame
CRT frame
2 mm

(Viewfinder)


Centering
Magnet


CN5
CN6
CN2
CN7
CN1
CN4
TP2
RV2 (FOCUS)
RV9 (SUB BRIGHT)
RV3 (H HOLD)
RV6 (V SIZE)
TP3
TP1
RV1 (H SIZE)
E 1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV8 (PEAKING OFF SET)
RV5 (V HOLD)

VF-50 BOARD (COMPONENT SIDE)


CRT
tube (black)
lock paint (white)
socket

Move the centering magnets together taking care not to be shift the white marked point. If the adjustment does not work well, shift the centering magnets to 45° of the angle or lesser.

- Note

- After adjustment is completed, close the VF-50 board.
  Check that the picture is in the center of the viewfinder in the normal installing position on the unit.

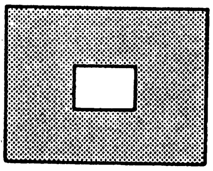
7-7-7. Peaking Level Adjustment

- Setting

Equipment:	Board: VF-50 board

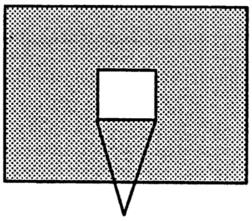
- Preparation

- Shoot the white window chart and adjust the iris control so that the white peak level at the VIDEO OUT terminal is 50 IRE.
- BRIGHT and CONTRAST controls of the viewfinder: mechanical center.
- Turn the PEAKING control (of the viewfinder) from fully clockwise to counterclockwise by 10 degrees.

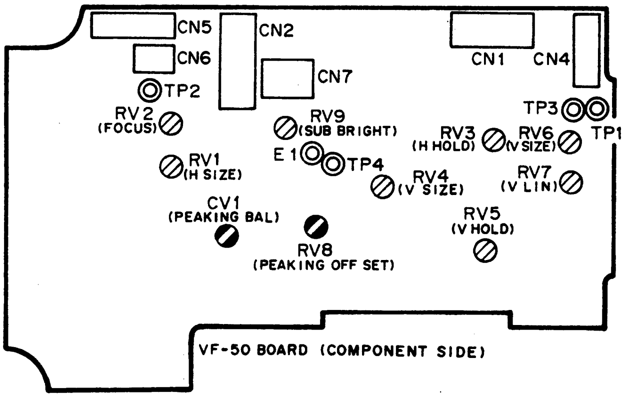


- Adjustment procedures

- Test point : Viewfinder
- Adj. point : ⊘ CV1 (PEAKING BAL)/VF-50
  ⊘ RV8 (PEAKING OFFSET)/VF-50
- Spec. : Adjust the ⊘ CV1 /VF-50 and ⊘ RV8 /VF-50 so that the peak level at edges are the same.



The peak level at edges should be the same.

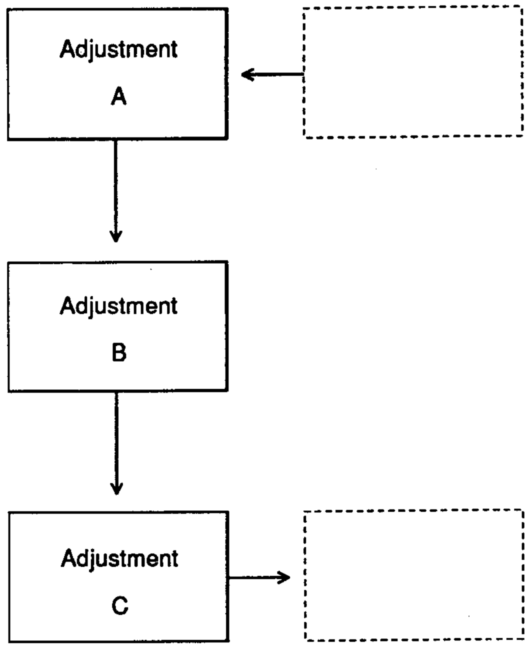

CN5
CN6
CN2
CN7
CN1
CN4
TP2
TP3
TP1
RV2 (FOCUS)
RV9 (SUB BRIGHT)
RV3 (H HOLD)
RV6 (V SIZE)
RV1 (H SIZE)
E1
TP4
RV4 (V SIZE)
RV7 (V LIN)
CV1 (PEAKING BAL)
RV8 (PEAKING OFF SET)
RV5 (V HOLD)
VF-50 BOARD (COMPONENT SIDE)

7-8. PARTIAL ADJUSTMENT

Before this adjustment, set the switches referring to the Sec. 7-1-2 Connection and Initial Setting.

7-8-1. Partial Adjustment of Video Signal System

The relation between respective adjustments of the video signal system is shown in Fig. 7-1. Perform the adjustments as described below.


Adjustment A
Adjustment B
Adjustment C

When adjustment B is performed:

① Check that Adjustment A satisfies the specification. (When the specification is not satisfied, readjust it.)

② Perform adjustment B.

③ Check that adjustment C satisfies the specification. If the specification is not satisfied, readjust it.

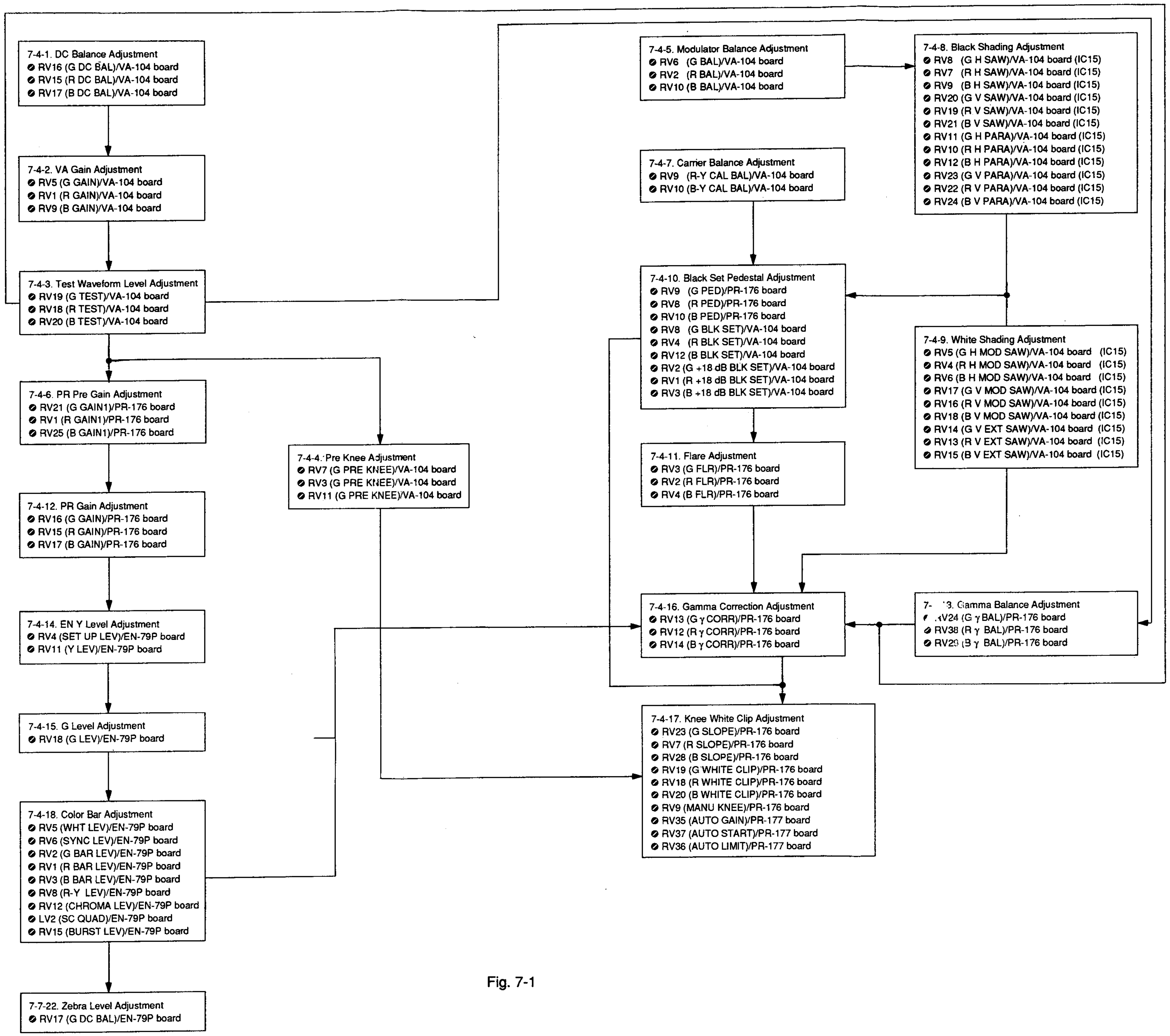

7-4-1. DC Balance Adjustment
⊘ RV16 (G DC BAL)/VA-104 board
⊘ RV15 (R DC BAL)/VA-104 board
⊘ RV17 (B DC BAL)/VA-104 board
7-4-2. VA Gain Adjustment
⊘ RV5 (G GAIN)/VA-104 board
⊘ RV1 (R GAIN)/VA-104 board
⊘ RV9 (B GAIN)/VA-104 board
7-4-3. Test Waveform Level Adjustment
⊘ RV19 (G TEST)/VA-104 board
⊘ RV18 (R TEST)/VA-104 board
⊘ RV20 (B TEST)/VA-104 board
7-4-6. PR Pre Gain Adjustment
⊘ RV21 (G GAIN1)/PR-176 board
⊘ RV1 (R GAIN1)/PR-176 board
⊘ RV25 (B GAIN1)/PR-176 board
7-4-4. Pre Knee Adjustment
⊘ RV7 (G PRE KNEE)/VA-104 board
⊘ RV3 (G PRE KNEE)/VA-104 board
⊘ RV11 (G PRE KNEE)/VA-104 board
7-4-12. PR Gain Adjustment
⊘ RV16 (G GAIN)/PR-176 board
⊘ RV15 (R GAIN)/PR-176 board
⊘ RV17 (B GAIN)/PR-176 board
7-4-14. EN Y Level Adjustment
⊘ RV4 (SET UP LEV)/EN-79P board
⊘ RV11 (Y LEV)/EN-79P board
7-4-15. G Level Adjustment
⊘ RV18 (G LEV)/EN-79P board
7-4-18. Color Bar Adjustment
⊘ RV5 (WHT LEV)/EN-79P board
⊘ RV6 (SYNC LEV)/EN-79P board
⊘ RV2 (G BAR LEV)/EN-79P board
⊘ RV1 (R BAR LEV)/EN-79P board
⊘ RV3 (B BAR LEV)/EN-79P board
⊘ RV8 (R-Y LEV)/EN-79P board
⊘ RV12 (CHROMA LEV)/EN-79P board
⊘ LV2 (SC QUAD)/EN-79P board
⊘ RV15 (BURST LEV)/EN-79P board
7-7-22. Zebra Level Adjustment
⊘ RV17 (G DC BAL)/EN-79P board
7-4-5. Modulator Balance Adjustment
⊘ RV6 (G BAL)/VA-104 board
⊘ RV2 (R BAL)/VA-104 board
⊘ RV10 (B BAL)/VA-104 board
7-4-7. Carrier Balance Adjustment
⊘ RV9 (R-Y CAL BAL)/VA-104 board
⊘ RV10 (B-Y CAL BAL)/VA-104 board
7-4-8. Black Shading Adjustment
⊘ RV8 (G H SAW)/VA-104 board (IC15)
⊘ RV7 (R H SAW)/VA-104 board (IC15)
⊘ RV9 (B H SAW)/VA-104 board (IC15)
⊘ RV20 (G V SAW)/VA-104 board (IC15)
⊘ RV19 (R V SAW)/VA-104 board (IC15)
⊘ RV21 (B V SAW)/VA-104 board (IC15)
⊘ RV11 (G H PARA)/VA-104 board (IC15)
⊘ RV10 (R H PARA)/VA-104 board (IC15)
⊘ RV12 (B H PARA)/VA-104 board (IC15)
⊘ RV23 (G V PARA)/VA-104 board (IC15)
⊘ RV22 (R V PARA)/VA-104 board (IC15)
⊘ RV24 (B V PARA)/VA-104 board (IC15)
7-4-10. Black Set Pedestal Adjustment
⊘ RV9 (G PED)/PR-176 board
⊘ RV8 (R PED)/PR-176 board
⊘ RV10 (B PED)/PR-176 board
⊘ RV8 (G BLK SET)/VA-104 board
⊘ RV4 (R BLK SET)/VA-104 board
⊘ RV12 (B BLK SET)/VA-104 board
⊘ RV2 (G +18 dB BLK SET)/VA-104 board
⊘ RV1 (R +18 dB BLK SET)/VA-104 board
⊘ RV3 (B +18 dB BLK SET)/VA-104 board
7-4-9. White Shading Adjustment
⊘ RV5 (G H MOD SAW)/VA-104 board (IC15)
⊘ RV4 (R H MOD SAW)/VA-104 board (IC15)
⊘ RV6 (B H MOD SAW)/VA-104 board (IC15)
⊘ RV17 (G V MOD SAW)/VA-104 board (IC15)
⊘ RV16 (R V MOD SAW)/VA-104 board (IC15)
⊘ RV18 (B V MOD SAW)/VA-104 board (IC15)
⊘ RV14 (G V EXT SAW)/VA-104 board (IC15)
⊘ RV13 (R V EXT SAW)/VA-104 board (IC15)
⊘ RV15 (B V EXT SAW)/VA-104 board (IC15)
7-4-11. Flare Adjustment
⊘ RV3 (G FLR)/PR-176 board
⊘ RV2 (R FLR)/PR-176 board
⊘ RV4 (B FLR)/PR-176 board
7-4-16. Gamma Correction Adjustment
⊘ RV13 (G γ CORR)/PR-176 board
⊘ RV12 (R γ CORR)/PR-176 board
⊘ RV14 (B γ CORR)/PR-176 board
7- 13. Gamma Balance Adjustment
⊘ RV24 (G γ BAL)/PR-176 board
⊘ RV38 (R γ BAL)/PR-176 board
⊘ RV29 (B γ BAL)/PR-176 board
7-4-17. Knee White Clip Adjustment
⊘ RV23 (G SLOPE)/PR-176 board
⊘ RV7 (R SLOPE)/PR-176 board
⊘ RV28 (B SLOPE)/PR-176 board
⊘ RV19 (G WHITE CLIP)/PR-176 board
⊘ RV18 (R WHITE CLIP)/PR-176 board
⊘ RV20 (B WHITE CLIP)/PR-176 board
⊘ RV9 (MANU KNEE)/PR-176 board
⊘ RV35 (AUTO GAIN)/PR-177 board
⊘ RV37 (AUTO START)/PR-177 board
⊘ RV36 (AUTO LIMIT)/PR-177 board

Fig. 7-1

SECTION 8
VTR SYSTEM ALIGNMENT

8-1. PRECAUTIONS ON ADJUSTMENTS

- Boards Extension
  When the boards are extended, be sure to turn the POWER switch to OFF position.

8-2. POWER AND SYSTEM CONTROL ADJUSTMENT

【Equipment】
- Variable DC Power Supply
- Digital Voltmeter
- Blank tape BCT-20G or BCT-20M

【Switches setting on the side panel and function Panel】
Do not change the setting below unless otherwise specified.

- VTR switch : STBY
- GAIN selector : 0
- OUTPUT/DCC selector : CAM/OFF
- WHITE BAL selector : PRST
- AUDIO IN CH-1/CH-2 switch : REAR/LINE
- AUDIO SELECT CH-1/CH-2 switch : AUTO
- F-RUN/R-RUN switch : R-RUN
- REAL TIME switch : OFF

8-2-1 BAT +5V Voltage Adjustment

- Setting

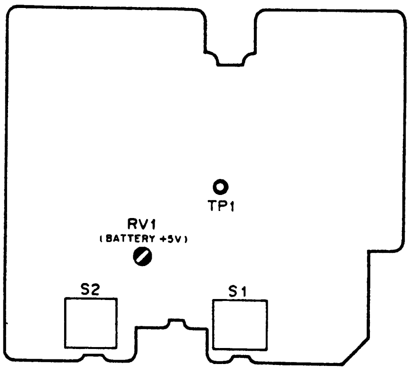
Equipment: Digital Volt Meter	Board: PS-162 board

- Preparation

- DC IN: 12V±0.5Vdc
- Insert a cassette tape and put the unit into the REC mode.

- Adjustment procedures

Test point : TP1/PS-162 (GND : E1/PS-162)
Adj. point : ⊘RV1 (+5V ADJ)/PS-162
Spec. : +5.5 ±0.02 Vdc



PS-162 BOARD (COMPONENT SIDE)

8-2-2 Battery Voltage Detection Adjustment

- Setting

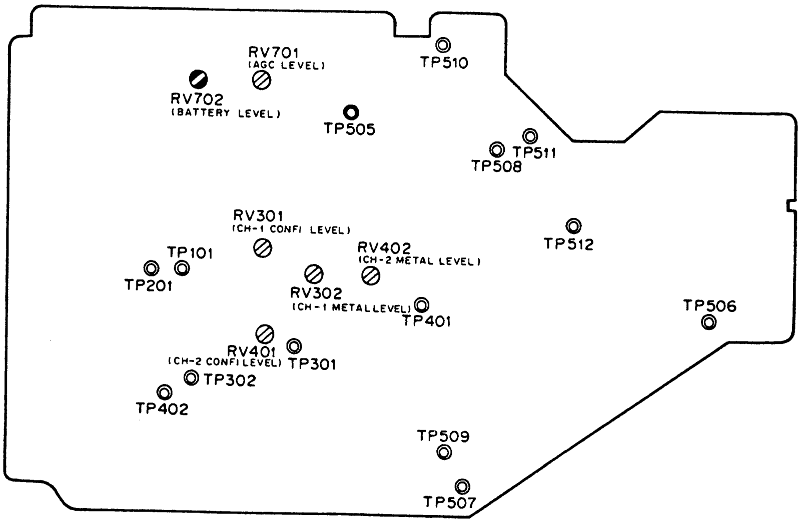
Equipment: Digital Volt Meter	Board: TC-48AP board

- Preparation

- DC IN: 11.50±0.02Vdc
- Insert a cassette tape and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP505/TC-48AP
  GND: E501/TC-48AP
- Adj. Point : ⊘RV702
  (BATTERY LEVEL)/TC-48AP
- Spec. : 1.95±0.03Vdc


RV701
(AGC LEVEL)
TP510
RV702
(BATTERY LEVEL)
TP505
TP511
TP508
RV301
(CH-1 CONFI LEVEL)
TP101
RV402
(CH-2 METAL LEVEL)
TP512
TP201
RV302
(CH-1 METAL LEVEL)
TP401
TP506
RV401
(CH-2 CONFI LEVEL)
TP301
TP302
TP402
TP509
TP507

TC-48A/AP BOARD (SOLDERING SIDE)

8-3. SERVO SYSTEM ADJUSTMENT

【Equipment】
- Dualtrace Oscilloscope
- Blank tape BCT-20G or BCT-20M

【Switches setting on the side panel and function panel】
Do not change the setting below unless otherwise specified.

- VTR switch : STBY
- GAIN selector : 0
- OUTPUT/DCC selector : CAM/OFF
- WHITE BAL selector : PRST
- AUDIO IN CH-1/CH2 switch : REAR/LINE
- AUDIO SELECT CH-1/CH-2 switch : AUTO
- F-RUN/R-RUN switch : R-RUN
- REAL TIME switch : OFF

8-3-1 Capstan FG-B Adjustment

- Setting

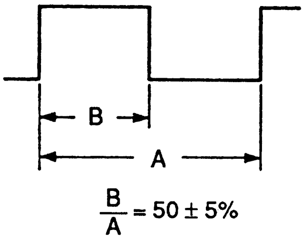
Equipment: Dualtrace Oscilloscope	Board: SV-97AP board

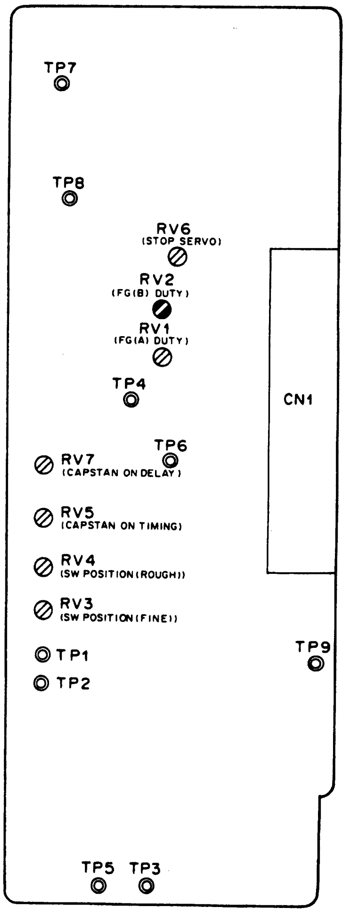
- Preparation

- Insert the BCT-20M or BCT-20G and put the unit into the PLAY mode.

- Adjustment procedures

- Test point : TP27/Extension board
- Adj. point : ⊘RV2/SV-97AP
- Spec. : $\frac{B}{A}$ =50±5%


B
A
$\frac{B}{A} = 50 \pm 5\%$


TP7
TP8
RV6 (STOP SERVO)
RV2 (FG(B) DUTY)
RV1 (FG(A) DUTY)
TP4
CN1
TP6
RV7 (CAPSTAN ON DELAY)
RV5 (CAPSTAN ON TIMING)
RV4 (SW POSITION (ROUGH))
RV3 (SW POSITION (FINE))
TP1
TP2
TP9
TP5
TP3

SV-97A/AP BOARD (COMPONENT SIDE)

8-3-2 Stop Servo Adjustment

- Setting

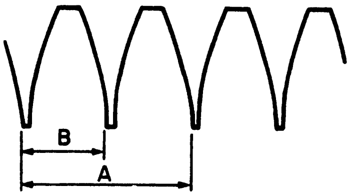
Equipment: Dualtrace Oscilloscope	Board: SV-97AP board

- Preparation

- Insert the BCT-20M or BCT-20G and put the unit into the PLAY mode.

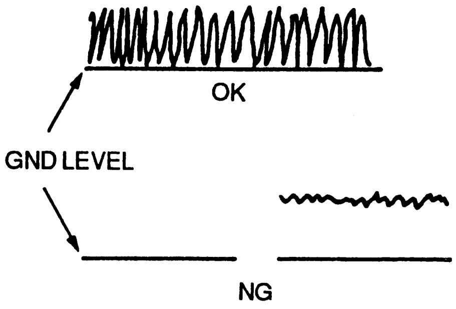
- Adjustment procedures

1 Test point : TP4/SV-97AP
Adj. point : ⊘RV1/SV-97AP
Spec. : $\frac{B}{A}$ =50±5% (PLAY mode)

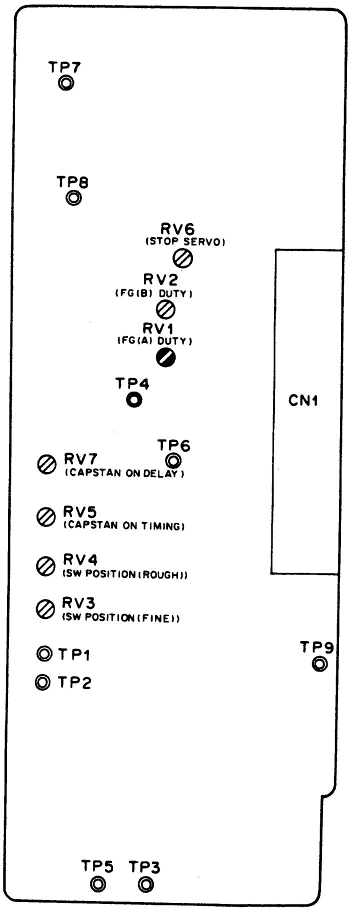


TRIG: TP27/Extension board

2 Test point : TP4/SV-97AP
Adj. point : RV1/SV-97AP
Spec. : (STOP mode)


OK
GND LEVEL
NG

TRIG: TP27/Extension board


TP7
TP8
RV6 (STOP SERVO)
RV2 (FG(B) DUTY)
RV1 (FG(A) DUTY)
TP4
CN1
TP6
RV7 (CAPSTAN ON DELAY)
RV5 (CAPSTAN ON TIMING)
RV4 (SW POSITION(ROUGH))
RV3 (SW POSITION(FINE))
TP1
TP2
TP9
TP5
TP3

SV-97A/AP BOARD (COMPONENT SIDE)

8-3-3 Composite Shooting Adjustment

- Setting

Equipment: Dualtrace Oscilloscope	Board: SV-97AP board

- Preparation

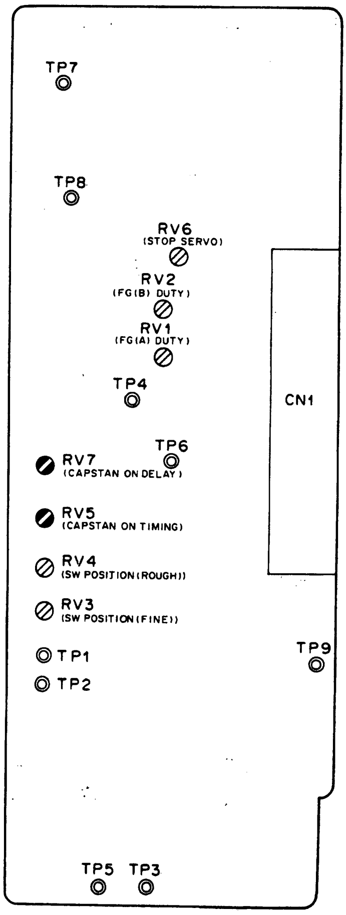
- Insert the BCT-20M or BCT-20G.
- Connect the Servo Remote Control Tool to connector CN2 on the SV-97AP board.
- Short between TP11 and TP1 on the extension board with a shorting clip.
- Short between TP9 on the SV-97AP board and TP18 on the extension board with a shorting clip.

- Adjustment procedures

1 • REC SERVO switch/Servo Remote Control Tool : ON
  • Test point : TP7/Extension board
  • Spec. : Check that the signal at TP7 is set low, high, and low (for 80 seconds (max)).

2. • REC SERVO switch/Servo Remote Control Tool : OFF
  • Test point : TP8/Extension board
  • Adj. point : ⊘RV5/SV-97AP
  • Spec. : Adjust so that the high signal at TP8 is set low.

3. • Test point : TP10/Extension board
  • Adj. point : ⊘RV7/SV-97AP
  • Spec. : Adjust so that the high signal at TP10 is set low.


TP7
TP8
RV6
(STOP SERVO)
RV2
(FG(B) DUTY)
RV1
(FG(A) DUTY)
TP4
CN1
RV7
(CAPSTAN ON DELAY)
TP6
RV5
(CAPSTAN ON TIMING)
RV4
(SW POSITION(ROUGH))
RV3
(SW POSITION(FINE))
TP1
TP2
TP9
TP5
TP3

SV-97A/AP BOARD (COMPONENT SIDE)

- Note

After adjustment is completed, remove the shorting clips and set the connector to the former position.

8-4. AUDIO SYSTEM ADJUSTMENT

【Equipment】
- Low-frequency Oscillator
- Audio Noise Meter
- DC Voltmeter
- Frequency Counter
- Modulation Analyzer
- PB Adaptor: VA-500 or VA-510
- Blank tape BCT-20G or BCT-20M
- Alignment tape: CR8-1APS (8-960-098-45) : OXIDE
  CR8-1BPS (8-960-096-86) : METAL

*Alignment tape: CR8-1APS

TIME min. sec	AUDIO TRACK
0:00	1KHz, 0VU
2:55	Blank
3:00	10KHz, –10VU
4:55	Blank
5:00	1KHz, –20VU
5:55	Blank
6:00	40Hz, –20VU 7KHz, –20VU 10KHz, –20VU 15KHz, –20VU
7:55	Blank
8:00 10:00	1KHz sine wave (for audio & CTL height)

*Alignment tape: CR8-1BPS

TIME min. sec	AUDIO TRACK
0:00	1KHz, 0VU
2:55	Blank
3:00	15KHz, 0VU
4:55	Blank
5:00	1KHz, –20VU
5:55	Blank
6:00 7:55	40Hz, –20VU 7KHz, –20VU 10KHz, –20VU 15KHz, –20VU

【Switches setting on the side panel】
Do not change the setting below unless otherwise specified.

- AUDIO SELECT CH-1/CH-2 switch : AUTO
- MONITOR switch : PB
- MONITOR SELECT switch : MIX
- AUDIO IN switch : LINE
- DOLBY NR switch : OFF

【Note】
- 0dBu=0.775Vrms
- Put the Audio Noise Meter into rms mode.
- "WEIGHTING" in the specifications column shows WEIGHTING mode of the audio Noise Meter.
  DIN AUDIO: 22Hz to 22kHz BPF

8-4-1 Level Volume Reference Position Adjustment

- Setting

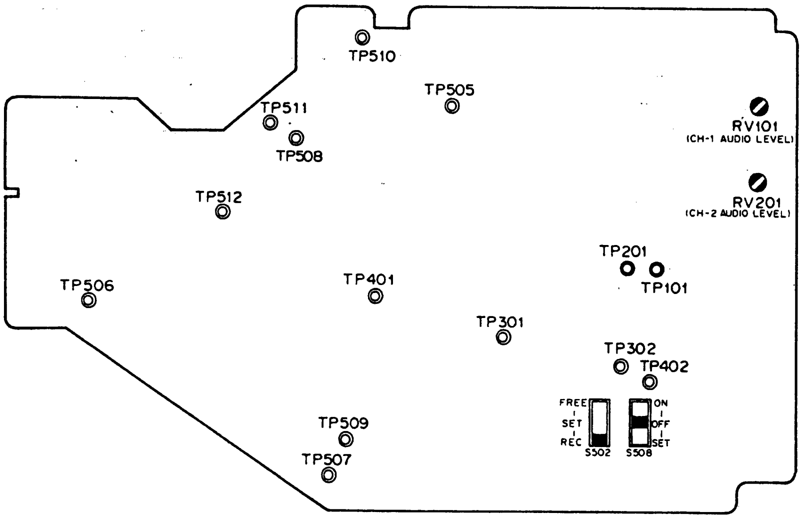
Equipment: Audio Noise Meter	Board: TC-48AP board

- Preparation

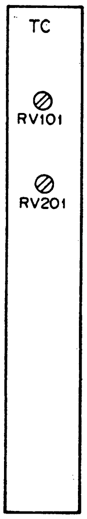
- AUDIO SELECT CH-1/CH-2
  SW→MAN
- AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu
- EJECT mode

- Adjustment procedures

- Test point : CH-1 : TP101/TC-48AP
  CH-2 : TP201/TC-48AP
- Adj. point : CH-1 : ⊘RV101 (CH-1 AUDIO LEVEL)/TC-48AP (side panel)
  CH-2 : ⊘RV201 (CH-2 AUDIO LEVEL)/TC-48AP (side panel)
- Spec. : −10.0±0.1dBu
  WEIGHTING: DIN AUDIO


TP510
TP505
TP511
TP508
RV101
(CH-1 AUDIO LEVEL)
TP512
RV201
(CH-2 AUDIO LEVEL)
TP201
TP101
TP506
TP401
TP301
TP302
TP402
FREE
SET
REC
S502
ON
OFF
SET
S508
TP509
TP507

TC-48A/AP BOARD (SOLDERING SIDE)


TC
RV101
RV201

TC-48A/AP BOARD
(PANEL SIDE)

- Note

The adjustment level in this section is used as an audio system's reference level.
After that, never turn RV101 and RV201 during audio system adjustment.

8-4-2 Level Meter Adjustment

- Setting

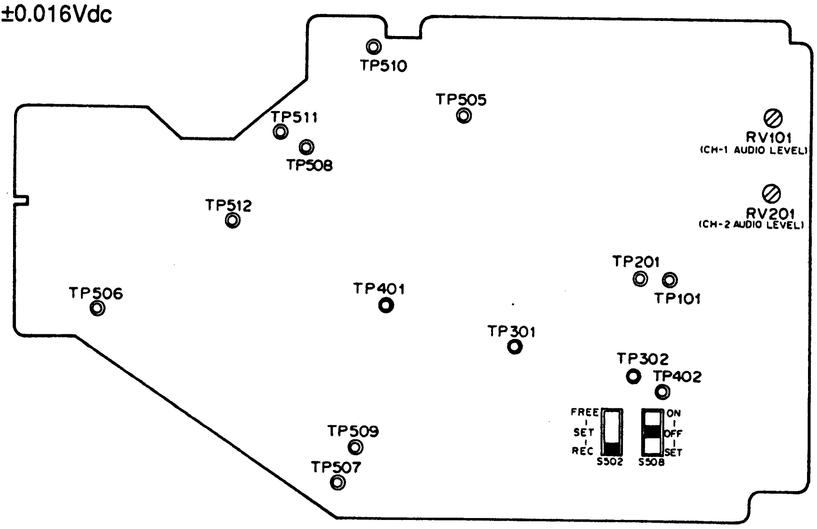
Equipment: DC Volt Meter	Board: TC-48AP board

- Preparation

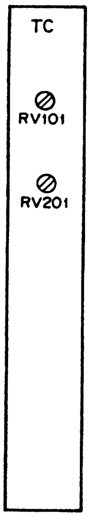
- AUDIO SELECT CH-1/CH-2 SW→MAN
- AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu
- DC Voltmeter

- Adjustment procedures

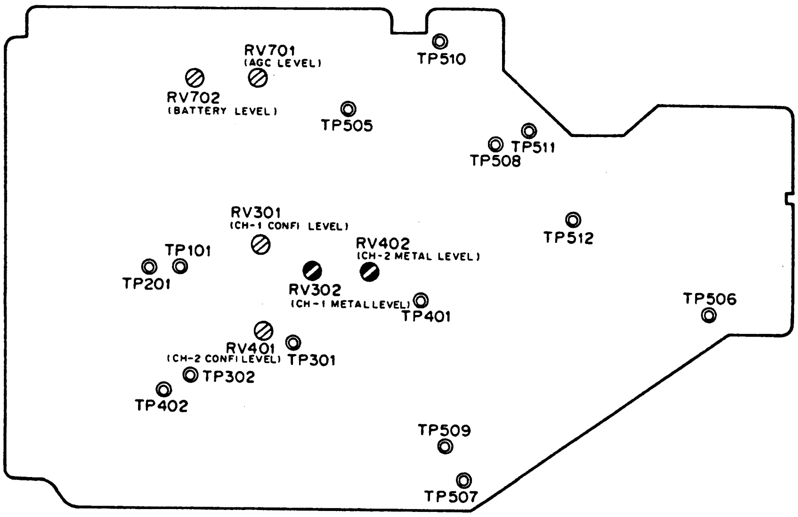
Test point : CH-1 : TP301/TC-48AP
CH-2 : TP401/TC-48AP
Adj. point : CH-1 : ⊘RV302 (CH-1 LEVEL)/TC-48AP
CH-2 : ⊘RV402 (CH-2 LEVEL)/TC-48AP
Spec. : +1.104±0.016Vdc


TP510
TP505
TP511
TP508
RV101
(CH-1 AUDIO LEVEL)
TP512
RV201
(CH-2 AUDIO LEVEL)
TP201
TP101
TP506
TP401
TP301
TP302
TP402
FREE
SET
REC
S502
ON
OFF
SET
S508
TP509
TP507

TC-48A/AP BOARD (SOLDERING SIDE)


TC
RV101
RV201

TC-48A/AP
(PANEL SIDE)


RV701
(AGC LEVEL)
TP510
RV702
(BATTERY LEVEL)
TP505
TP511
TP508
RV301
(CH-1 CONFI LEVEL)
TP512
TP101
RV402
(CH-2 METAL LEVEL)
TP201
RV302
(CH-1 METAL LEVEL)
TP401
TP506
RV401
(CH-2 CONFI LEVEL)
TP301
TP302
TP402
TP509
TP507

TC-48A/AP BOARD (COMPONENT SIDE)

8-4-3 CONFI Level Adjustment

- Setting

Equipment: Audio Noise Meter	Board: TC-48AP board

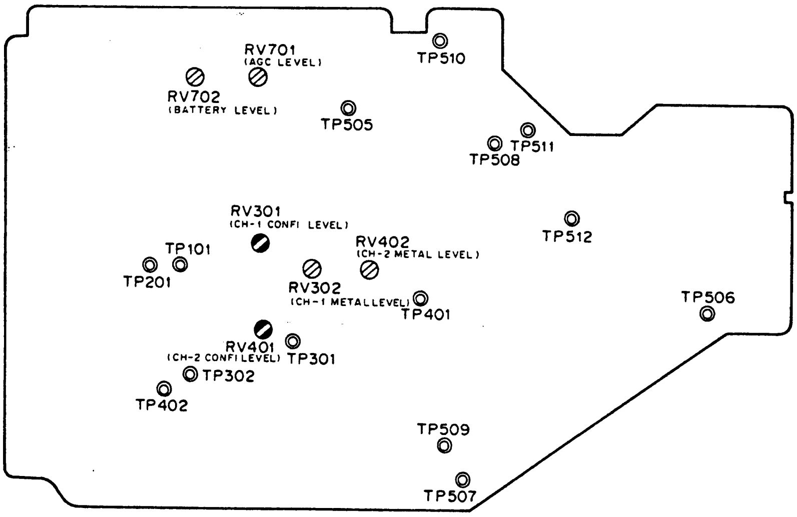
- Preparation

- AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu
- MONITOR SELECT SW → CH-1
- MONITOR control (side panel): Fully turn clockwise
- Insert the alignment tape CR5-1A and put the unit into the STOP mode.

- Adjustment procedures

- Test point : EARPHONE connector (8-ohm load)
- Adj. point : ① ●RV301 (CH-1 CONFI LEVEL)/TC-48AP
  ② ●RV401 (CH-1 CONFI LEVEL)/TC-48AP
- Spec. : ① (Calibrated value in adjustment procedure1) ±0.1dB
  ② (Calibrated value in adjustment procedure1) ±1dB

1. Take a note of the level at the EARPHONE Connector (8 load)
2. Play back the audio 1KHz/0dB portion of the alignment tape CR8-1APS.
3. Adjust ●RV301 (CH-1 CONFI LEVEL)/TC-48A to ±0.1dB of the value calibrated in 1.
4. Set the MONITOR SELECT SW to CH-2.
5. Play back the audio 1KHz/0dB portion of the alignment tape CR8-1APS
6. Adjust ●RV401 (CH-2 CONFI LEVEL)/TC-48A to ±1dB of the value calibrated in 1.


RV701
(AGC LEVEL)
TP510
RV702
(BATTERY LEVEL)
TP505
TP511
TP508
RV301
(CH-1 CONFI LEVEL)
TP512
TP101
RV402
(CH-2 METAL LEVEL)
TP201
RV302
(CH-1 METAL LEVEL)
TP401
TP506
RV401
(CH-2 CONFI LEVEL)
TP301
TP302
TP402
TP509
TP507

TC-48A/P BOARD (SOLDERING SIDE)

- Note

- After having been adjusted, the monitor switch should be put into MIX.

8-4-4 CONFI TC Cancel Adjustment

- Setting

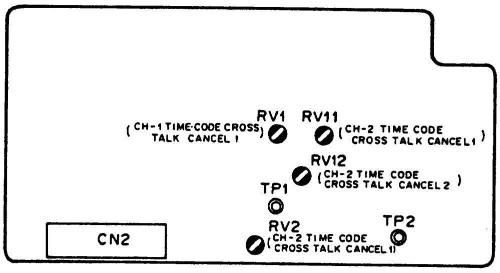
Equipment: Audio Noise Meter	Board: TB-5 board

- Preparation

- AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu
- MONITOR control (side panel): Fully turn clockwise
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : EARPHONE connector (8-ohm load)
- Adj. point : CH-1 : ⊘RV1/TB-5, ⊘RV2/TB-5
  CH-2 : ⊘RV11/TB-5, ⊘RV12/TB-5
- Spec. : Minimize the level.
  WEIGHTING: CCIR ARM


RV1
(CH-1 TIME-CODE CROSS TALK CANCEL 1)
RV11
(CH-2 TIME CODE CROSS TALK CANCEL1)
RV12
(CH-2 TIME CODE CROSS TALK CANCEL 2)
TP1
CN2
RV2
(CH-2 TIME CODE CROSS TALK CANCEL 1)
TP2

TB-5 BOARD (COMPONENT SIDE)

8-4-5 Dolby Input Level Adjustment

- Setting

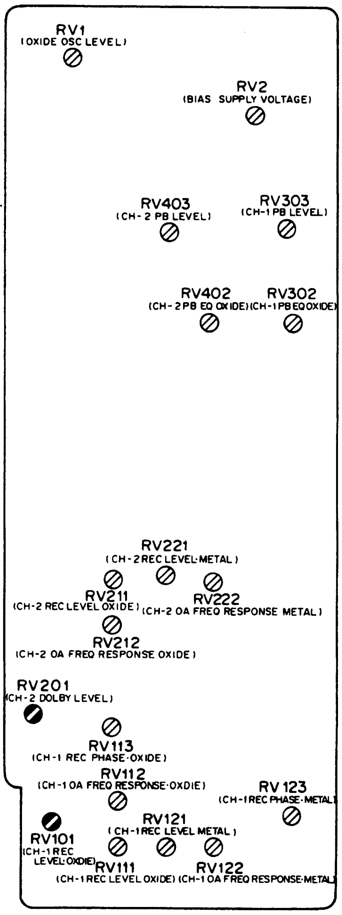
Equipment: Audio Noise Meter	Board: AU-97P board

- Preparation

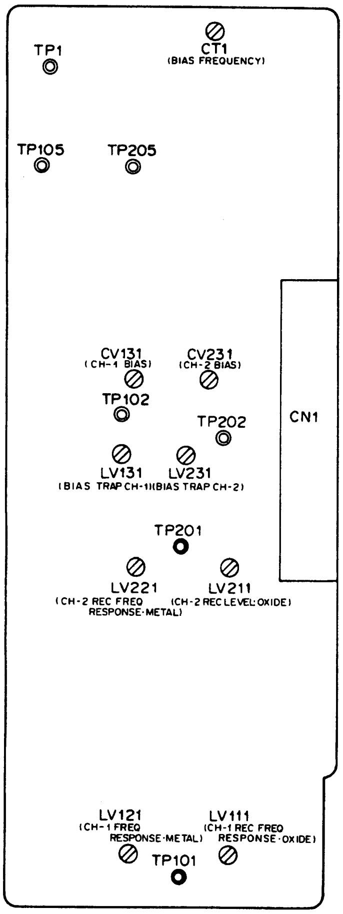
- AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu
- Insert the BCT-20G

- Adjustment procedures

- Test point : CH-1 : TP101/AU-97P
  CH-2 : TP201/AU-97P
- Adj. point : ⊘RV101 (CH-1 DOLBY LEVEL)/AU-97P
  ⊘RV201 (CH-2 DOLBY LEVEL)/AU-97P
- Spec. : −10.0±0.1dBu
  WEIGHTING: DIN AUDIO


RV1 (OXIDE OSC LEVEL)
RV2 (BIAS SUPPLY VOLTAGE)
RV403 (CH-2 PB LEVEL)
RV303 (CH-1 PB LEVEL)
RV402 (CH-2 PB EQ OXIDE)
RV302 (CH-1 PB EQ OXIDE)
RV221 (CH-2 REC LEVEL·METAL)
RV211 (CH-2 REC LEVEL OXIDE)
RV222 (CH-2 OA FREQ RESPONSE METAL)
RV212 (CH-2 OA FREQ RESPONSE OXIDE)
RV201 (CH-2 DOLBY LEVEL)
RV113 (CH-1 REC PHASE·OXIDE)
RV112 (CH-1 OA FREQ RESPONSE·OXDIE)
RV 123 (CH-1 REC PHASE·METAL)
RV121 (CH-1 REC LEVEL METAL)
RV101 (CH-1 REC LEVEL·OXDIE)
RV111 (CH-1 REC LEVEL OXIDE)
RV122 (CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)


TP1
CT1 (BIAS FREQUENCY)
TP105
TP205
CV131 (CH-1 BIAS)
CV231 (CH-2 BIAS)
TP102
TP202
CN1
LV131 (BIAS TRAP CH-1)
LV231 (BIAS TRAP CH-2)
TP201
LV221 (CH-2 REC FREQ RESPONSE·METAL)
LV211 (CH-2 REC LEVEL·OXIDE)
LV121 (CH-1 FREQ RESPONSE·METAL)
LV111 (CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD (COMPONENT SIDE)

8-4-6 Bias Supply Voltage Adjustment

- Setting

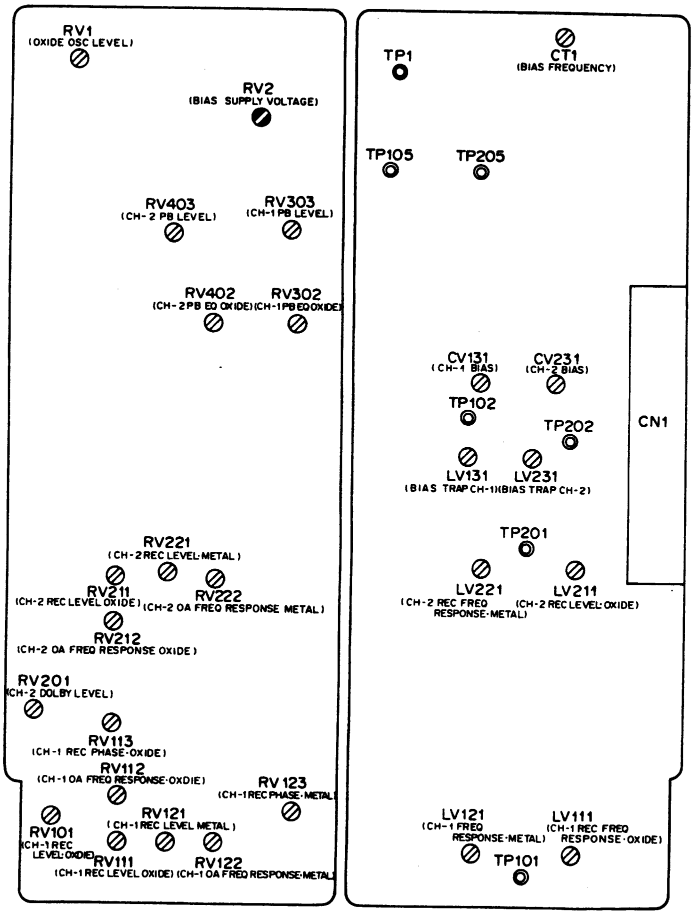
Equipment: DC Voltmeter	Board: AU-97P board

- Preparation

- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP1/AU-97P
- Adj. point : ⊘RV2/AU-97P
- Spec. : +10.00±0.01Vdc


RV1 (OXIDE OSC LEVEL)
RV2 (BIAS SUPPLY VOLTAGE)
RV403 (CH-2 PB LEVEL)
RV303 (CH-1 PB LEVEL)
RV402 (CH-2 PB EQ OXIDE)
RV302 (CH-1 PB EQ OXIDE)
RV221 (CH-2 REC LEVEL METAL)
RV211 (CH-2 REC LEVEL OXIDE)
RV222 (CH-2 OA FREQ RESPONSE METAL)
RV212 (CH-2 OA FREQ RESPONSE OXIDE)
RV201 (CH-2 DOLBY LEVEL)
RV113 (CH-1 REC PHASE-OXIDE)
RV112 (CH-1 OA FREQ RESPONSE-OXDIE)
RV123 (CH-1 REC PHASE-METAL)
RV121 (CH-1 REC LEVEL METAL)
RV101 (CH-1 REC LEVEL OXIDE)
RV111 (CH-1 REC LEVEL OXIDE)
RV122 (CH-1 OA FREQ RESPONSE METAL)
TP1
CT1 (BIAS FREQUENCY)
TP105
TP205
CV131 (CH-1 BIAS)
CV231 (CH-2 BIAS)
TP102
TP202
CN1
LV131 (BIAS TRAP CH-1)
LV231 (BIAS TRAP CH-2)
TP201
LV221 (CH-2 REC FREQ RESPONSE-METAL)
LV211 (CH-2 REC LEVEL OXIDE)
LV121 (CH-1 FREQ RESPONSE-METAL)
LV111 (CH-1 REC FREQ RESPONSE-OXIDE)
TP101

AU-97/P BOARD (SOLDERING SIDE) AU-97/P BOARD (COMPONENT SIDE)

8-4-7 Bias Trap Adjustment

- Setting

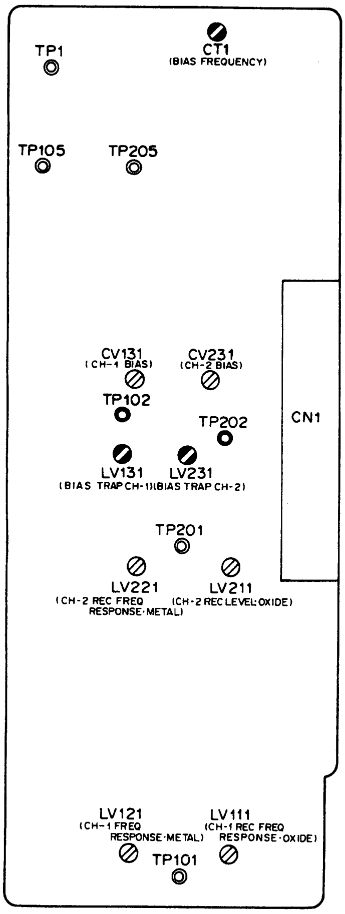
Equipment: Frequency Counter	Board: AU-97P board

- Preparation

- AUDIO IN CH-1/CH-2 connector: No signal
- Insert the BCT-20M and put the unit into the REC mode.
- Connect the Frequency Counter to AC OUT connector on the Audio Noise Meter.

- Adjustment procedures

- Test point : CH-1 : TP102/AU-97P
  CH-2 : TP202/AU-97P
- Adj. point : ① Bias frequency ⊘CT1/AU-97P
  ② Trap
  CH-1 : ⊘LV131 (CH-1 BIAS TRAP)/AU-97P
  CH-2 : ⊘LV231 (CH-2 BIAS TRAP)/AU-97P
- Spec. : ① 134±0.5kHz
  ② Minimize the level. (+13dB or less)
  WEIGHTING: WIDE BAND


TP1
CT1
(BIAS FREQUENCY)
TP105
TP205
CV131
(CH-1 BIAS)
CV231
(CH-2 BIAS)
TP102
TP202
CN1
LV131
LV231
(BIAS TRAP CH-1)(BIAS TRAP CH-2)
TP201
LV221
(CH-2 REC FREQ RESPONSE·METAL)
LV211
(CH-2 REC LEVEL:OXIDE)
LV121
(CH-1 FREQ RESPONSE·METAL)
LV111
(CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD(COMPONENT SIDE)

8-4-8 Bias Current Adjustment

Step 1

- Note

- CH-1 and CH-2 should be adjusted at the same time.

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN
- Preset RV1/AU-97P to the mechanical center.
- AUDIO IN CH-1/CH-2 connector: 5kHz, +4dBu
- MONITOR control (side panel): Fully turn clockwise

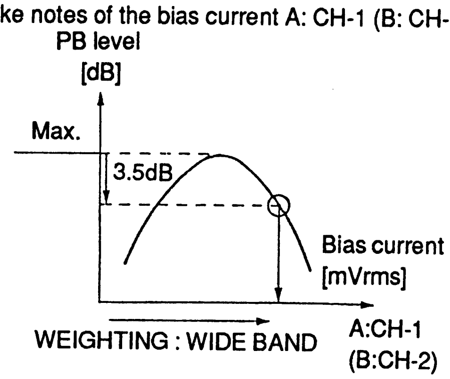
CH-1 Adjustment
- MONITOR SELECT SW → CH-1

CH-2 Adjustment
- MONITOR SELECT SW → CH-2

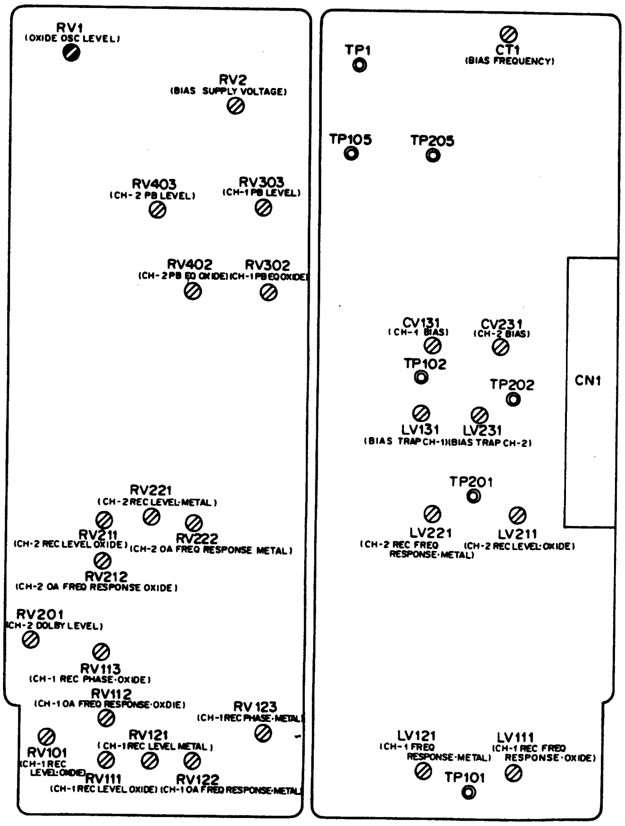
- Adjustment procedures

- Test point : CH-1 Adjustment
  PB level: EARPHONE connector
  Bias current: TP1/FL-55P
  GND: E1/FL-55P
  CH-2 Adjustment
  PB level: EARPHONE connector
  Bias current: TP11/FL-55P
  GND: E1/FL-55P
- Adj. point : CH-1: ⊘CV131 (CH-1 BIAS)/AU-97P
  CH-2: ⊘CV231 (CH-2 BIAS)/AU-97P
  * IF the adjustment is not completed by CV131 and CV231, adjust by ⊘RV1/AU-97P
- Spec. : PB level

1. Insert the BCT-20K and put the unit into the REC mode.
2. Minimize the level.
3. Increase the bias current and maximize the PB level.
4. Further increase the bias current, and lower the PB level by 3.5dB from max level.
5. Take notes of the bias current A: CH-1 (B: CH-2).

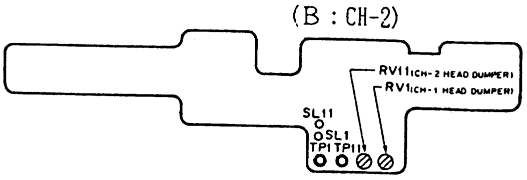


WEIGHTING : WIDE BAND


RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2 PB EQ OXIDE)
RV302
(CH-1 PB EQ OXIDE)
RV221
(CH-2 REC LEVEL·METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE·OXIDE)
RV112
(CH-1 OA FREQ RESPONSE·OXDIE)
RV 123
(CH-1 REC PHASE·METAL)
RV121
(CH-1 REC LEVEL METAL)
RV101
(CH-1 REC LEVEL·OXIDE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE·METAL)
TP1
CT1
(BIAS FREQUENCY)
TP105
TP205
CV131
(CH-1 BIAS)
CV231
(CH-2 BIAS)
TP102
TP202
CN1
LV131
LV231
(BIAS TRAP CH-1)(BIAS TRAP CH-2)
TP201
LV221
(CH-2 REC FREQ RESPONSE·METAL)
LV211
(CH-2 REC LEVEL·OXIDE)
LV121
(CH-1 FREQ RESPONSE·METAL)
LV111
(CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD (SOLDERING SIDE)   AU-97/P BOARD (COMPONENT SIDE)

(B : CH-2)


RV11 (CH-2 HEAD DUMPER)
RV1 (CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)

Step 2

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

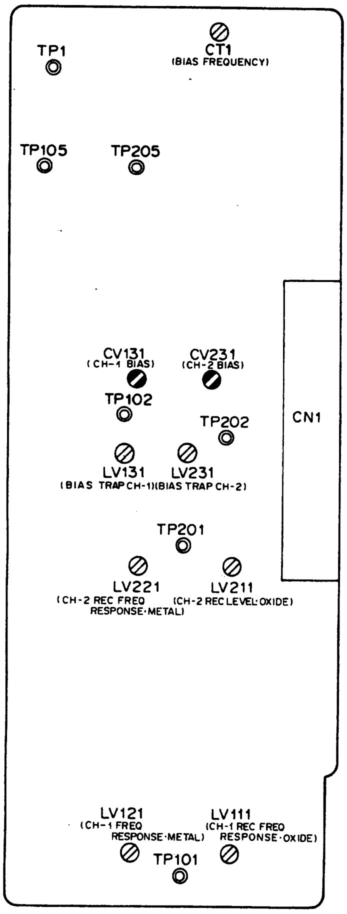
- Preparation

> - AUDIO SELECT CH-1/CH-2 SW→MAIN
> - Preset RV1/AU-97P to the mechanical center.
> - AUDIO IN CH-1/CH2 connector: 5kHz, +4dBu
> - MONITOR control (side panel): Fully turn clockwise.

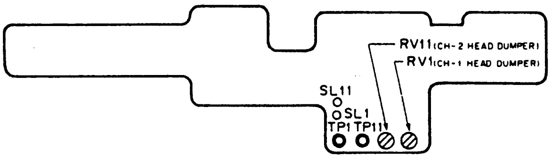
- Adjustment procedures

- Test point : CH-1 : TP1/FL-55P
  CH-2 : TP11/FL-55P
  (GND : E1/FL-55P)
- Adj. point : CH-1 : ⊘CV131 (CH-1 BIAS)/AU-97P) (BCT-20M)
  CH-2 : ⊘CV231 (CH-2 BIAS)/AU-97P)
  CH-1/CH-2=⊘RV-1/AU-97P .... (BCT-20G)
- Spec. : CH-1 : A+3±0.1mVrms) (BCT-20M)
  CH-2 : B+3±0.1mVrms)
- Spec. : CH-1 : A±0.1mVrms) (BCT-20G)
  CH-2 : B±0.1mVrms)
  WEIGHTING: WIDE BAND

1. Insert a blank tape (BCT-20M), and set the unit to the REC mode.
2. Assuming the values you took a note of in Step 1 as A and B, adjust as follows:
   CH-1 : A+3±0.1mVrms
   CH-2 : B+3±0.1mVrms
3. Insert a blank tape (BCT-20G), and set the unit to the REC mode.
4. Adjust to:
   CH-1 : A±0.1mVrms
   CH-2 : B±0.1mVrms


TP1
CT1
(BIAS FREQUENCY)
TP105
TP205
CV131
(CH-1 BIAS)
CV231
(CH-2 BIAS)
TP102
TP202
CN1
LV131
LV231
(BIAS TRAP CH-1)(BIAS TRAP CH-2)
TP201
LV221
(CH-2 REC FREQ RESPONSE·METAL)
LV211
(CH-2 REC LEVEL·OXIDE)
LV121
(CH-1 FREQ RESPONSE·METAL)
LV111
(CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD (COMPONENT SIDE)


RV11(CH-2 HEAD DUMPER)
RV1(CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)

- Note

> 1: The bias frequency should be 134±0.5kHz.
> 2: After adjustments in step3 and 4 are completed, disconnect the extension board and install the AU-97P board on the unit then check the specification. If the specification is shifted, readjust step2 taking it into account.

8-4-9 Recording Current Tentative Adjustment

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

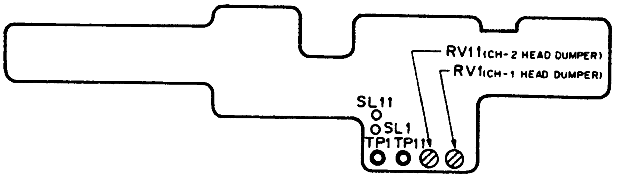
- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN
- AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu

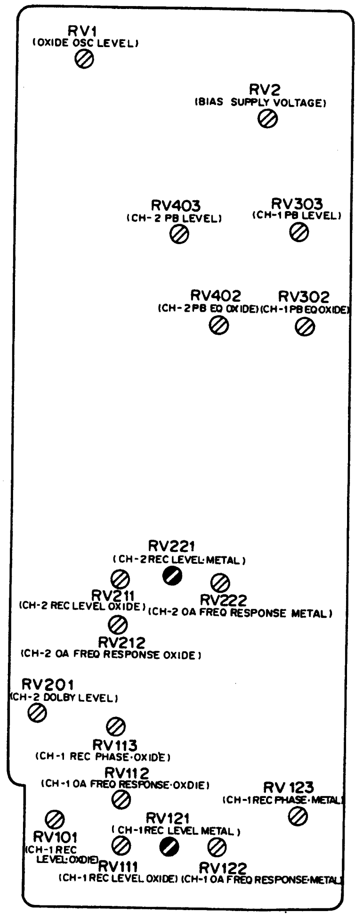
- Adjustment procedures

- Test point : BVW-400AP → REC mode
  CH-1 : TP1/FL-55P
  CH-2 : TP11/FL-55P
  (GND : E1/FL-55P)
- Adj. point : CH-1 : ●RV121/AU-97P
  CH-2 : ●RV221/AU-97P
- Spec. : +4.0±0.1dBM
  WEIGHTING: DIN AUDIO

1. Insert the BCT-20M and put the unit into the REC mode.
2. Play back the recorded tape using a standard VTR (BVW-75P or the equivalent).
3. DOLBY NR ON/OFF→OFF
4. LINE OUT CH-1/CH-2connector: Standard VTR (Terminated in 600 ohms.)
5. If the specification is not satisfied, perform the following adjustment.
6. Replace the blank tape with an oxide tape (BCT-20G), and execute adjustment procedures 1 through 5.


RV11(CH-2 HEAD DUMPER)
RV1(CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)


RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2PB EQ OXIDE)
RV302
(CH-1PB EQOXIDE)
RV221
(CH-2REC LEVEL·METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE·OXIDE)
RV112
(CH-1 OA FREQ RESPONSE·OXDIE)
RV 123
(CH-1REC PHASE·METAL)
RV121
(CH-1REC LEVEL METAL)
RV101
(CH-1 REC LEVEL·OXDIE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)

8-4-10 Overall Frequency Response Adjustment (Metal)

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

- Preparation

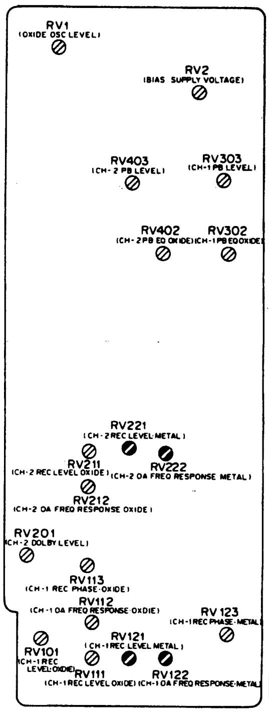
  - AUDIO SELECT CH-1/CH-2 SW→MAN

- Adjustment procedures

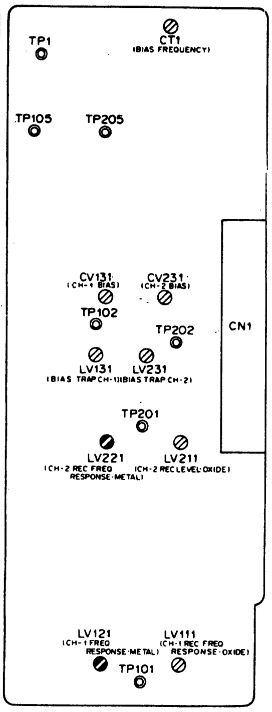
- Test point : BVW-400AP → REC mode
  CH-1 : TP1/FL-55P
  CH-2 : TP11/FL-55P
  (GND : E1/FL-55P)
- Adj. point : CH-1 : ●RV122/AU-97P
  CH-2 : ●RV222/AU-97P (7~10kHz)
  CH-1 : ●RV121/AU-97P
  CH-2 : ●RV221/AU-97P (near 15kHz)
- Spec. :

frequency	level (dB)
40Hz	Ref $^{+1.5}_{-3}$
1kHz	Reference
7kHz	Ref ±1
10kHz	Ref $^{+1}_{-1.5}$
15kHz	Ref $^{+1}_{-2}$

WEIGHTING: WIDE BAND

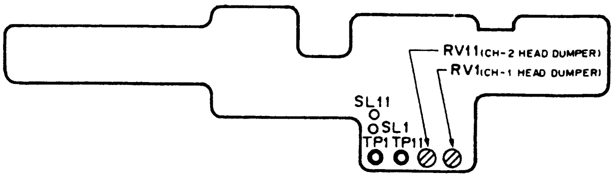

RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2PB EQ OXIDE)
RV302
(CH-1PB EQ OXIDE)
RV221
(CH-2 REC LEVEL METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE OXIDE)
RV112
(CH-1 OA FREQ RESPONSE OXDIE)
RV 123
(CH-1 REC PHASE METAL)
RV121
(CH-1 REC LEVEL METAL)
RV101
(CH-1 REC LEVEL OXDIE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE METAL)

AU-97/P BOARD (SOLDERING SIDE)


TP1
CT1
(BIAS FREQUENCY)
TP105
TP205
CV131
(CH-1 BIAS)
CV231
(CH-2 BIAS)
TP102
TP202
CN1
LV131
(BIAS TRAP CH-1)
LV231
(BIAS TRAP CH-2)
TP201
LV221
(CH-2 REC FREQ RESPONSE METAL)
LV211
(CH-2 REC LEVEL OXIDE)
LV121
(CH-1 FREQ RESPONSE METAL)
LV111
(CH-1 REC FREQ RESPONSE OXIDE)
TP101

AU-97/P BOARD (COMPONENT SIDE)

1. Insert the BCT-20M and put the unit into the REC mode.
2. Sequentially supply 40Hz, 1kHz, 7kHz, 10kHz and 15kHz/−16dBu signals to the AUDIO IN CH-1/CH-2 connector for thirty seconds.
3. Play back the recorded tape using a standard VTR (BVW-75 or the equivalent).
4. Correct the overage and shortage of the level in the check procedure and confirm that the required specification is satisfied.
   : When the intermediate frequency is low
   CH-1 : Turn ●RV122/AU-97P counterclockwise.
   CH-2 : Turn ●RV222/AU-97P counterclockwise.
   : When the intermediate frequency is high
   CH-1 : Turn ●RV122/AU-97P clockwise.
   CH-2 : Turn ●RV222/AU-97P clockwise.
   : When the high frequency is low (near 15kHz)
   CH-1 : Turn ●LV121/AU-97P clockwise.
   CH-2 : Turn ●LV221/AU-97P clockwise.
   : When the high frequency is high
   CH-1 : Turn ●LV121/AU-97P counterclockwise.
   CH-2 : Turn ●LV221/AU-97P counterclockwise.


RV11 (CH-2 HEAD DUMPER)
RV1 (CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)

8-4-11 Overall Frequency Response Adjustment (Oxide)

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

- Preparation

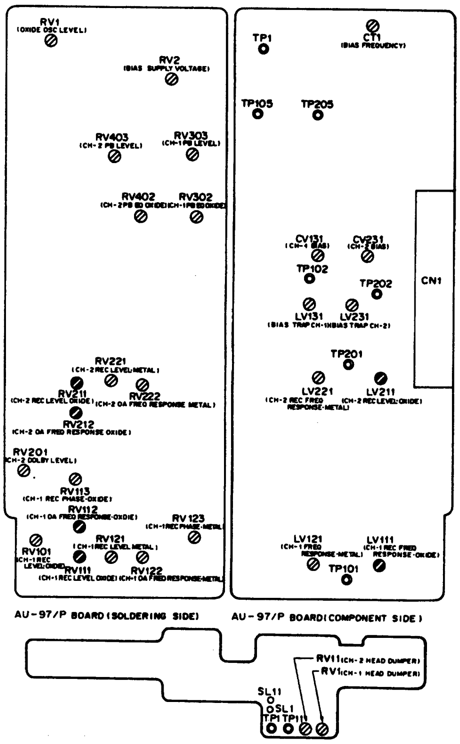
- AUDIO SELECT CH-1/CH-2 SW→MAN
- DOLBY NR ON/OFF SW→ON

- Adjustment procedures

- Test point : BVW-400AP→REC mode
  CH-1 : TP1/FL-55P
  CH-2 : TP11/FL-55P
  (GND : E1/FL-55P)
- Adj. point : CH-1 : ⊘RV112 /AU-97P
  CH-2 : ⊘RV212 /AU-97P) (7~10kHz)
  CH-1 : ⊘RV111/AU-97P
  CH-2 : ⊘RV211/AU-97P) (near 15kHz)
- Spec.

frequency	level (dB)
40Hz	Ref ±3.0
1kHz	Reference
7kHz	Ref ±1
10kHz	Ref $^{+1}_{-1.5}$
15kHz	Ref $^{+1}_{-2}$

WEIGHTING: WIDE BAND


RV1 (OXIDE OSC LEVEL)
RV2 (BIAS SUPPLY VOLTAGE)
RV403 (CH-2 PB LEVEL)
RV303 (CH-1 PB LEVEL)
RV402 (CH-2 PB EQ OXIDE)
RV302 (CH-1 PB EQ OXIDE)
RV221 (CH-2 REC LEVEL METAL)
RV211 (CH-2 REC LEVEL OXIDE)
RV222 (CH-2 OA FREQ RESPONSE METAL)
RV212 (CH-2 OA FREQ RESPONSE OXIDE)
RV201 (CH-2 DOLBY LEVEL)
RV113 (CH-1 REC PHASE-OXIDE)
RV112 (CH-1 OA FREQ RESPONSE-OXDIE)
RV 123 (CH-1 REC PHASE-METAL)
RV121 (CH-1 REC LEVEL METAL)
RV101 (CH-1 REC LEVEL OXIDE)
RV111 (CH-1 REC LEVEL OXIDE)
RV122 (CH-1 OA FREQ RESPONSE-METAL)
AU-97/P BOARD (SOLDERING SIDE)
TP1
CT1 (BIAS FREQUENCY)
TP105
TP205
CV131 (CH-1 BIAS)
CV231 (CH-2 BIAS)
TP102
TP202
CN1
LV131 (BIAS TRAP CH-1)
LV231 (BIAS TRAP CH-2)
TP201
LV221 (CH-2 REC FREQ RESPONSE-METAL)
LV211 (CH-2 REC LEVEL OXIDE)
LV121 (CH-1 FREQ RESPONSE-METAL)
LV111 (CH-1 REC FREQ RESPONSE-OXIDE)
TP101
AU-97/P BOARD (COMPONENT SIDE)
RV11 (CH-2 HEAD DUMPER)
RV1 (CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)

1. Insert the BCT-20G and put the unit into the REC mode.
2. Sequentially supply 40Hz, 1kHz, 7kHz, 10kHz and 15kHz/–16dBu signals to the AUDIO IN CH-1/CH-2 connector for thirty seconds.
3. Play back the recorded tape using a standard VTR (BVW-75 or the equivalent).
   (DOLBY NR ON/OFF SW→ON)
   LINE OUT CH-1/CH-2 connector: Standard VTR (Terminated in 600 ohms.)
4. Correct the overage and shortage of the level in the check procedure and confirm that the required specification is satisfied.
   : When the intermediate frequency is low (7 to 10kHz)
   CH-1 : Turn ⊘RV112/AU-97P counterclockwise.
   CH-2 : Turn ⊘RV212/AU-97P counterclockwise.
   : When the intermediate frequency is high
   CH-1 : Turn ⊘RV112/AU-97P clockwise.
   CH-2 : Turn ⊘RV212/AU-97P clockwise.
   : When the high frequency is low (near 15kHz)
   CH-1 : Turn ⊘LV111/AU-97P clockwise.
   CH-2 : Turn ⊘LV211/AU-97P clockwise.
   : When the high frequency is high
   CH-1 : Turn ⊘LV111/AU-97P counterclockwise.
   CH-2 : Turn ⊘LV211/AU-97P counterclockwise.

- Note

- After adjustment is completed, turn the DOLBY NR ON/OFF switch to OFF.

8-4-12 Overall Recording Current Adjustment

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

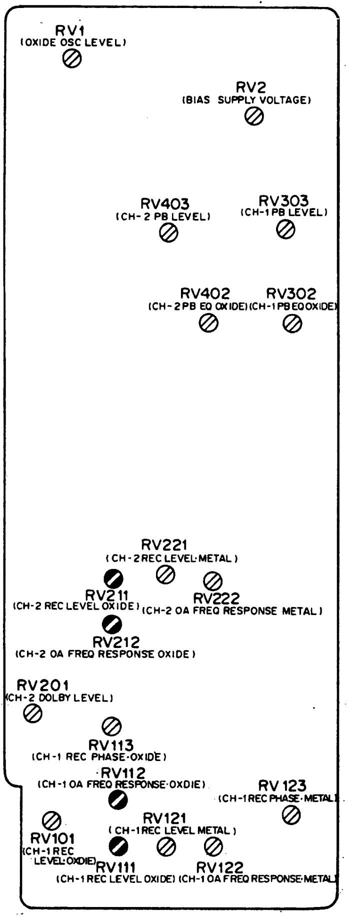
- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN
- AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu

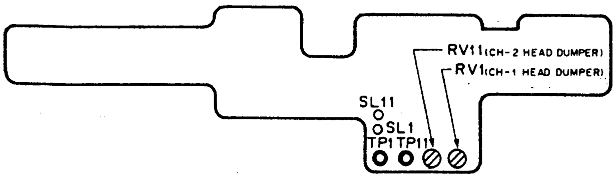
- Adjustment procedures

- Test point : BVW-400AP → REC mode
  CH-1 : TP1/FL-55P
  CH-2 : TP11/FL-55P
  (GND : E1/FL-55P)
- Adj. point : CH-1 : ●RV112/AU-97P
  CH-2 : ●RV212/AU-97P
  CH-1 : ●RV111/AU-97P) (BCT-20M)
  CH-2 : ●RV211/AU-97P)
- Spec. : +4.0 ±0.1dBm
  WEIGHTING: DIN AUDIO

1. Insert the BCT-20M and put the unit into the REC mode.
2. Play back the recorded tape using a standard VTR (BVW-75 or the equivalent).
   - LINE OUT CH-1/CH-2 connector: Standard VTR (Terminated in 600 ohms.)
3. Correct the overage and shortage of the level in the check procedure and confirm that the required specification is satisfied.
4. Replace with a blank tape (BCT-20G), and execute steps 1 through 3 (Set DOLBY NR ON/OFF SW to OFF).


RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2 PB EQ OXIDE)
RV302
(CH-1 PB EQ OXIDE)
RV221
(CH-2 REC LEVEL·METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE·OXIDE)
RV112
(CH-1 OA FREQ RESPONSE·OXDIE)
RV 123
(CH-1 REC PHASE·METAL)
RV121
(CH-1 REC LEVEL METAL)
RV101
(CH-1 REC LEVEL·OXDIE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)


RV11(CH-2 HEAD DUMPER)
RV1(CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)

8-4-13 Channel-to-Channel Phase adjustment (Oxide)

- Setting

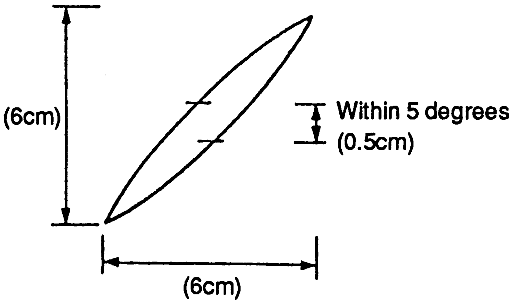
Equipment: Dualtrace Oscilloscope	Board: AU-97P board

- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN
- AUDIO IN CH-1/CH-2 connector: 15kHz, +4dBu

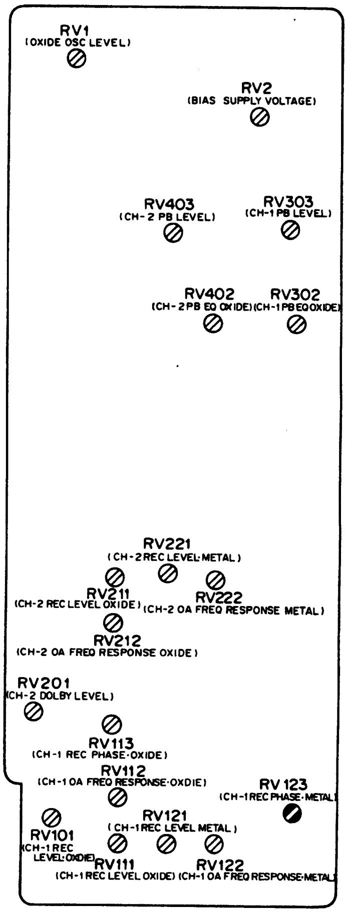
- Adjustment procedures

- Test point : BVW-400AP → REC mode
  CH-1 : TP102/AU-97P
  CH-2 : TP202/AU-97P
- Adj. point : ●RV113 (CH-1 REC PHASE)/AU-97P
- Spec.

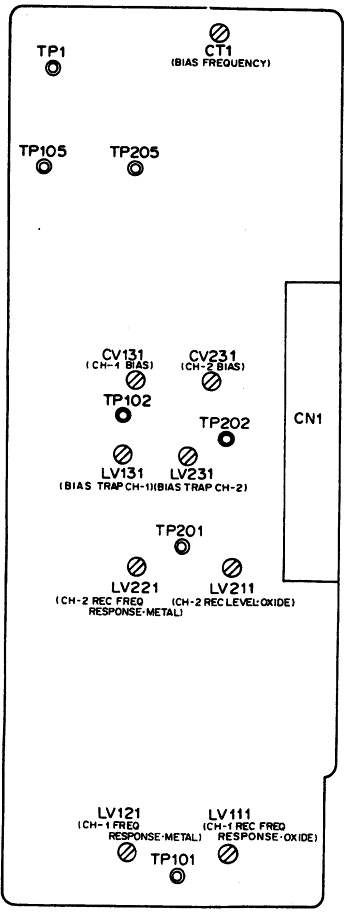

(6cm)
Within 5 degrees
(0.5cm)
(6cm)

Oscilloscope : XY mode

1. Insert the BCT-20G and put the unit into the REC mode.
2. Play back the recorded tape using a standard VTR (BVW-75 or the equivalent).
   LINE OUT CH-1/CH-2 connector: Standard VTR (Terminated in 600 ohms.)
3. Short between TP35 and TP47 on the extension board with the shorting clip.
4. Correct the shifted portion of the phase in the check procedure and confirm that the required specification is satisfied.


RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2 PB EQ OXIDE)
RV302
(CH-1 PB EQ OXIDE)
RV221
(CH-2 REC LEVEL·METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE·OXIDE)
RV112
(CH-1 OA FREQ RESPONSE·OXDIE)
RV 123
(CH-1 REC PHASE·METAL)
RV121
(CH-1 REC LEVEL METAL)
RV101
(CH-1 REC LEVEL·OXDIE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)


TP1
CT1
(BIAS FREQUENCY)
TP105
TP205
CV131
(CH-1 BIAS)
CV231
(CH-2 BIAS)
TP102
TP202
CN1
LV131
LV231
(BIAS TRAP CH-1)
(BIAS TRAP CH-2)
TP201
LV221
(CH-2 REC FREQ RESPONSE·METAL)
LV211
(CH-2 REC LEVEL·OXIDE)
LV121
(CH-1 FREQ RESPONSE·METAL)
LV111
(CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, remove the shorting clip.

8-4-14 Channel-to-Channel Phase adjustment (Metal)

- Setting

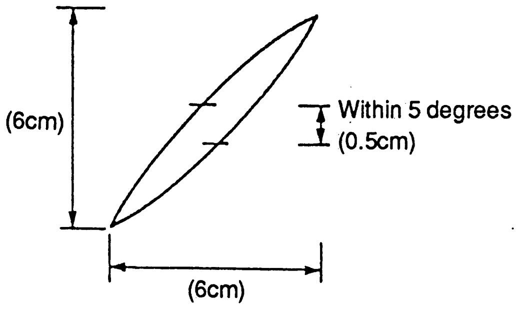
Equipment: Dualtrace Oscilloscope	Board: AU-97P board

- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN
- AUDIO IN CH-1/CH-2 connector: 15kHz, +4dBu

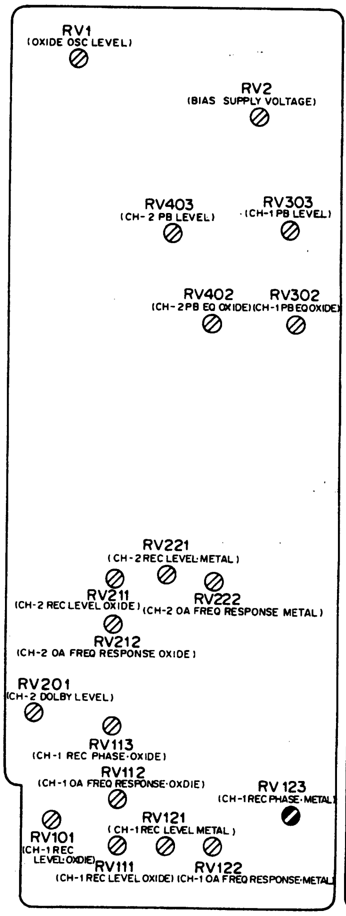
- Adjustment procedures

- Test point : BVW-400AP → REC mode
  CH-1 : TP102/AU-97P
  CH-2 : TP202/AU-97P
- Adj. point : ⊘RV123 (CH-1 REC PHASE)/AU-97P
- Spec.

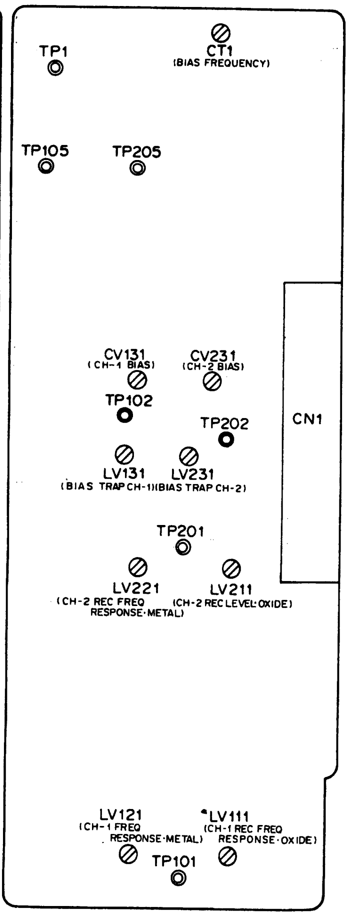

(6cm)
Within 5 degrees
(0.5cm)
(6cm)

Oscilloscope : XY mode

1. Insert the BCT-20G and put the unit into the REC mode.
2. Play back the recorded tape using a standard VTR (BVW-75 or the equivalent).
   LINE OUT CH-1/CH-2 connector: Standard VTR (Terminated in 600 ohms.)
3. Short between TP35 and TP47 on the extension board with the shorting clip.
4. Correct the shifted portion of the phase in the check procedure and confirm that the required specification is satisfied.


RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2PB EQ OXIDE)
RV302
(CH-1 PB EQ OXIDE)
RV221
(CH-2 REC LEVEL·METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE·OXIDE)
RV112
(CH-1 OA FREQ RESPONSE·OXDIE)
RV 123
(CH-1 REC PHASE·METAL)
RV121
(CH-1 REC LEVEL METAL)
RV101
(CH-1 REC LEVEL·OXDIE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)


TP1
CT1
(BIAS FREQUENCY)
TP105
TP205
CV131
(CH-1 BIAS)
CV231
(CH-2 BIAS)
TP102
TP202
CN1
LV131
(BIAS TRAP CH-1)
LV231
(BIAS TRAP CH-2)
TP201
LV221
(CH-2 REC FREQ RESPONSE·METAL)
LV211
(CH-2 REC LEVEL·OXIDE)
LV121
(CH-1 FREQ RESPONSE·METAL)
LV111
(CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, remove the shorting clip.

8-4-15 PB Amp Reference Level Adjustment

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

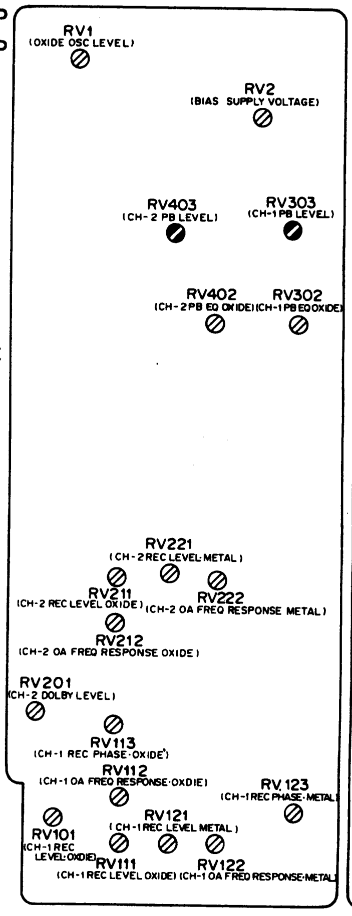
- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN

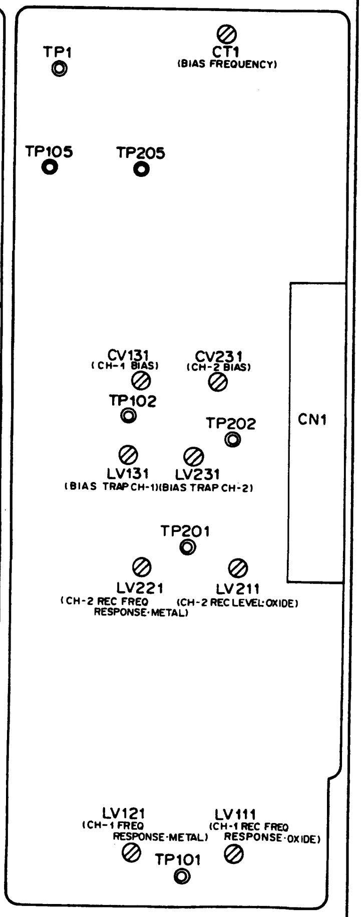
- Adjustment procedures

- Test point: CH-1 : TP105/AU-97P
  CH-2 : TP205/AU-97P
- Adj. point: CH-1 : ⊘RV303 (CH-1 PB LEVEL)/AU-97P
  CH-2 : ⊘RV403 (CH-2 PB LEVEL)/AU-97P
- Spec. · : ① −10.0 ±0.1dBμ
  ② $-10.0^{+0.5}_{-1.5}$ dBμ
  WEIGHT: DIN AUDIO

1. AUDIO IN CH-1/CH-2 connector: 1kHz, +4dBu
2. Insert the BCT-20G and put the unit into the REC mode.
3. Play back the self-recorded portion.
4. Adjust to Standard ①.
5. Playback the audio 1KHz/0dB portion of the alignment tape CR8-1APS.
6. Adjust to Standard ②.
7. If the specification is not satisfied, readjust step 1. But if not, perform the audio head height adjustment in Sec. 6-13.


RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2 PB EQ OXIDE)
RV302
(CH-1 PB EQ OXIDE)
RV221
(CH-2 REC LEVEL·METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE·OXIDE)
RV112
(CH-1 OA FREQ RESPONSE·OXDIE)
RV 123
(CH-1 REC PHASE·METAL)
RV121
(CH-1 REC LEVEL METAL)
RV101
(CH-1 REC LEVEL·OXDIE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)


TP1
CT1
(BIAS FREQUENCY)
TP105
TP205
CV131
(CH-1 BIAS)
CV231
(CH-2 BIAS)
TP102
TP202
CN1
LV131
LV231
(BIAS TRAP CH-1)
(BIAS TRAP CH-2)
TP201
LV221
(CH-2 REC FREQ RESPONSE·METAL)
LV211
(CH-2 REC LEVEL·OXIDE)
LV121
(CH-1 FREQ RESPONSE·METAL)
LV111
(CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD (COMPONENT SIDE)

8-4-16 PB Amp Frequency Response Adjustment

Step 1

- Setting

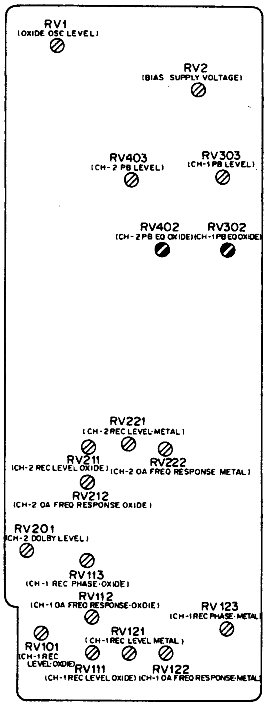
Equipment: Audio Noise Meter	Board: AU-97P board

- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN
- DOLBY NR ON/OFF SW→ON
- Connect the PB Adaptor (VA-500 or VA-510). (DOLBY NR ON/OFF SW→ON)
- Insert the BCT-20G and put the unit into the REC mode.
- Sequentially supply 40Hz, 1kHz, 7kHz, 10kHz and 15kHz/–16dBu signals to the AUDIO IN CH-1/CH-2 connector for thirty seconds.
- Select the Audio PB channel CH-1/CH-2 of the PB Adaptor and perform the adjustment. (Spec ①)
- Insert the BCT-20M and put the unit into the REC mode.
- Sequentially supply 40Hz, 1kHz, 7kHz, 10kHz and 15kHz/–16dBu signals to the AUDIO IN CH-1/CH-2 connector for thirty seconds.
- Select the Audio PB channel CH-1/CH-2 of the PB Adaptor and perform the adjustment. (Spec ②)
- AUDIO OUT connector/PB Adaptor (Terminated in 600 ohms.)

- Adjustment procedures

- Test point : CH-1 : TP1/FL-55P
  CH-2 : TP11/FL-55P
- Adj. point : Intermediate-frequency response
  CH-1 : ●RV302 (CH-1 PB EQ)/AU-97P
  CH-2 : ●RV402 (CH-2 PB EQ)/AU-97P
  High-frequency response
  CH-1 : ●RV1 (CH-1 HEAD DUMPER) FL-55P
  CH-2 : ●RV11 (CH-2 HEAD DUMPER) FL-55P


RV1
(OXIDE OSC LEVEL)
RV2
(BIAS SUPPLY VOLTAGE)
RV403
(CH-2 PB LEVEL)
RV303
(CH-1 PB LEVEL)
RV402
(CH-2 PB EQ OXIDE)
RV302
(CH-1 PB EQ OXIDE)
RV221
(CH-2 REC LEVEL·METAL)
RV211
(CH-2 REC LEVEL OXIDE)
RV222
(CH-2 OA FREQ RESPONSE METAL)
RV212
(CH-2 OA FREQ RESPONSE OXIDE)
RV201
(CH-2 DOLBY LEVEL)
RV113
(CH-1 REC PHASE·OXIDE)
RV112
(CH-1 OA FREQ RESPONSE·OXDIE)
RV 123
(CH-1 REC PHASE·METAL)
RV121
(CH-1 REC LEVEL METAL)
RV101
(CH-1 REC LEVEL·OXDIE)
RV111
(CH-1 REC LEVEL OXIDE)
RV122
(CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)

- Spec. :

① Oxide

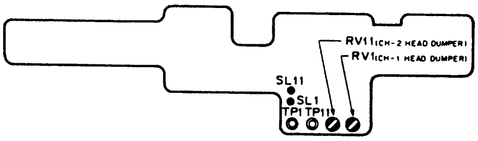
Frequency	Level (dB)
40Hz	Ref ±3
1kHz	Reference
7kHz	Ref ±1
10kHz	Ref $^{+1}_{-1.5}$
15kHz	Ref $^{+1}_{-2}$

② Metal

Frequency	Level (dB)
40Hz	Ref $^{+1.5}_{-3}$
1kHz	Reference
7kHz	Ref ±1
10kHz	Ref $^{+1}_{-1.5}$
15kHz	Ref $^{+1}_{-2}$

WEIGHTING: WIDE BAND

Adjust so that the specifications of the oxide and metal are satisfied.
When the high-frequency level is low after ●RV1 and ●RV11 on the FL board are turned fully clockwise, solder the points below and readjust.


RV11 (CH-2 HEAD DUMPER)
RV1 (CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)

- Note

- After adjustment is completed, disconnect the PB Adaptor.

Step 2

- Setting

Equipment: Audio Noise Meter	Board: AU-97P board

- Preparation

- AUDIO SELECT CH-1/CH-2 SW→MAN
- DOLBY NR ON/OFF SW→ON
- Play back the audio 1kHz (reference), 40Hz, 7kHz, 10kHz and 15kHz signals on the alignment, tape CR8-1APS.
- AUDIO OUT connector/PB Adaptor (terminated in 600 ohms.)

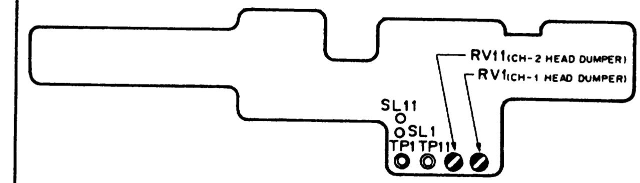
- Adjustment procedures

- Test point : CH-1 : TP105/AU-97P
  CH-2 : TP205/AU-97P
- Adj. point : Intermediate-frequency response
  CH-1 : ⊘RV302 (CH-1 PB EQ)/AU-97P
  CH-2 : ⊘RV402 (CH-2 PB EQ)/AU-97P
  High-frequency response
  CH-1 : ⊘RV1 (CH-1 HEAD DUMPER) FL-55P
  CH-2 : ⊘RV11 (CH-2 HEAD DUMPER) FL-55P
- Spec.

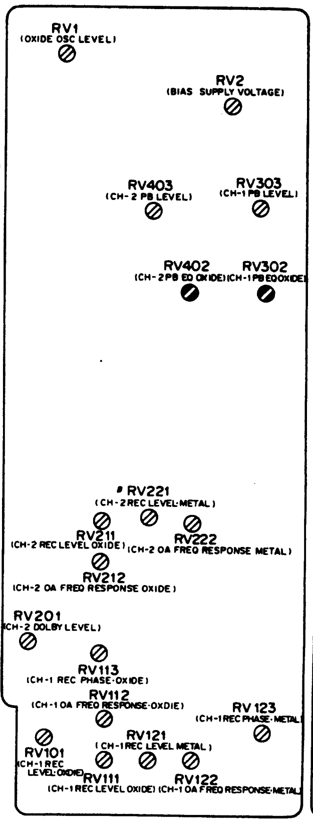
Frequency	Level (dB)
40Hz	Ref ±3
1kHz	Reference
7kHz	Ref ±3
10kHz	Ref ±3
15kHz	Ref ±3

WEIGHTING: WIDE BAND

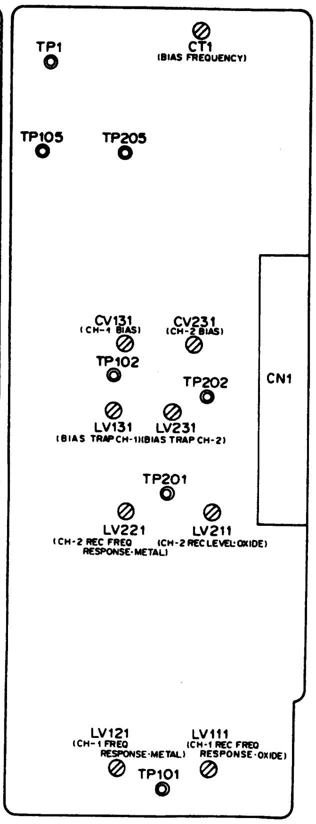
- If the specification is not satisfied, readjust step 1.
  But if not, perform the tape run alignment in Sec. 6.


RV11(CH-2 HEAD DUMPER)
RV1(CH-1 HEAD DUMPER)
SL11
SL1
TP1
TP11

FL-55/P BOARD (COMPONENT SIDE)


RV1 (OXIDE OSC LEVEL)
RV2 (BIAS SUPPLY VOLTAGE)
RV403 (CH-2 PB LEVEL)
RV303 (CH-1 PB LEVEL)
RV402 (CH-2 PB EQ OXIDE)
RV302 (CH-1 PB EQ OXIDE)
RV221 (CH-2 REC LEVEL·METAL)
RV211 (CH-2 REC LEVEL OXIDE)
RV222 (CH-2 OA FREQ RESPONSE METAL)
RV212 (CH-2 OA FREQ RESPONSE OXIDE)
RV201 (CH-2 DOLBY LEVEL)
RV113 (CH-1 REC PHASE·OXIDE)
RV112 (CH-1 OA FREQ RESPONSE·OXDIE)
RV 123 (CH-1 REC PHASE·METAL)
RV121 (CH-1 REC LEVEL METAL)
RV101 (CH-1 REC LEVEL·OXDIE)
RV111 (CH-1 REC LEVEL OXIDE)
RV122 (CH-1 OA FREQ RESPONSE·METAL)

AU-97/P BOARD (SOLDERING SIDE)


TP1
CT1 (BIAS FREQUENCY)
TP105
TP205
CV131 (CH-1 BIAS)
CV231 (CH-2 BIAS)
TP102
TP202
CN1
LV131
LV231
(BIAS TRAP CH-1)(BIAS TRAP CH-2)
TP201
LV221 (CH-2 REC FREQ RESPONSE·METAL)
LV211 (CH-2 REC LEVEL·OXIDE)
LV121 (CH-1 FREQ RESPONSE·METAL)
LV111 (CH-1 REC FREQ RESPONSE·OXIDE)
TP101

AU-97/P BOARD (COMPONENT SIDE)

8-4-17 AFM Carrier Frequency Adjustment

- Setting

Equipment: Frequency Counter	Board: AFM-6P board

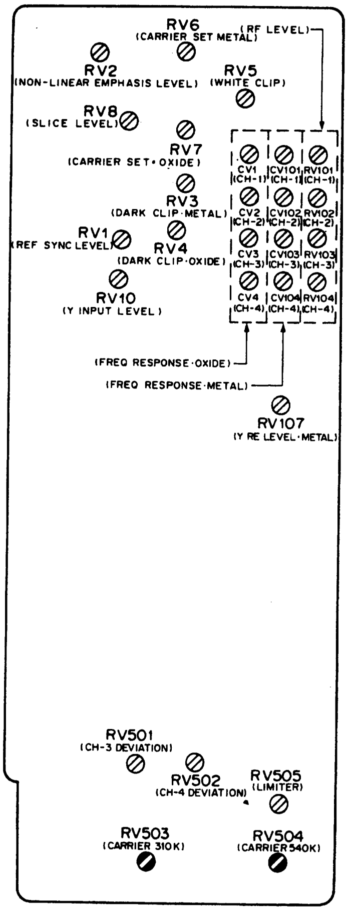
- Preparation

- AUDIO IN CH-1/CH-2 connector: No signal
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

1. CARRIER 310kHz Adj.
- Test point : TP35/Extension board: AFM-6P
- Adj. point : ⊘RV503/AFM-6P
- Spec. : 310±1kHz

2. CARRIER 540kHz Adj.
- Test point : TP36/Extension board: AFM-6P
- Adj. point : ⊘RV504/AFM-6P
- Spec. : 540±1kHz


RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET·OXIDE)
RV3 (DARK CLIP·METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP·OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107 (Y RE LEVEL·METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)

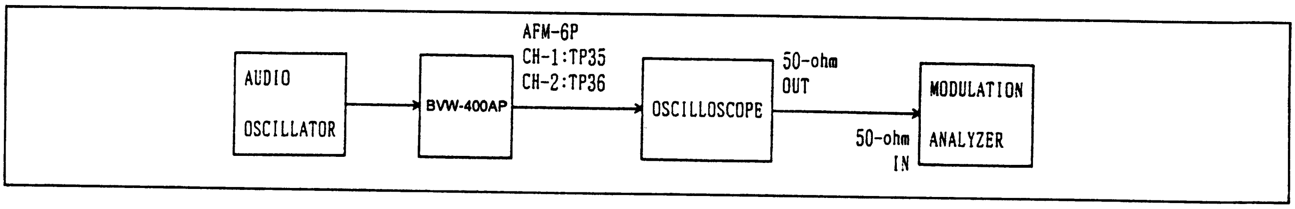
AFM-6/P BOARD(SOLDERING SIDE)

8-4-18 AFM Deviation Adjustment

- Setting

Equipment: Frequency Counter	Board: AFM-6P board

- Connection


AUDIO OSCILLATOR
BVW-400AP
AFM-6P
CH-1:TP35
CH-2:TP36
OSCILLOSCOPE
50-ohm OUT
50-ohm IN
MODULATION ANALYZER

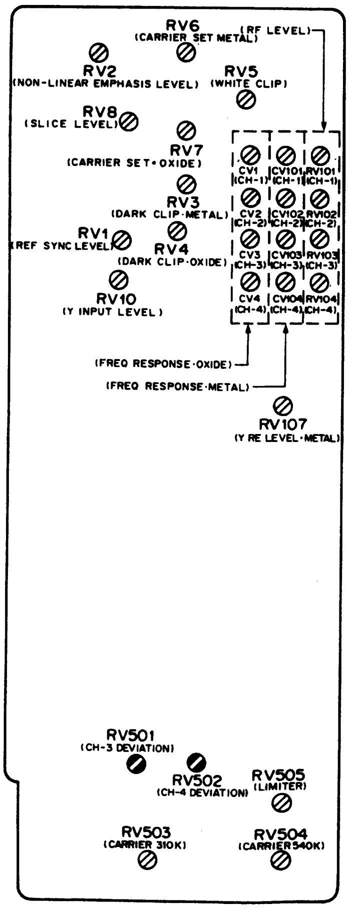
- Preparation

- AUDIO IN CH-1/CH-2 connector: 400Hz, +4dBu (Ref. Level)
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

1. CH-3 DEVIATION
- Test point : TP505/AFM-6P
- Adj. point : ⊘RV501/AFM-6P
- Spec. : +4±0.1dBm

2. CH-4 DEVIATION
- Test point : TP506/AFM-6P
- Adj. point : ⊘RV502/AFM-6P
- Spec. : +4±0.1dBm


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)

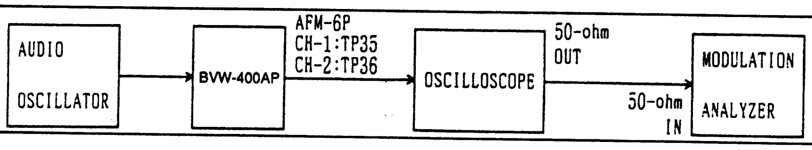
8-4-19 AFM Over Modulation Limiter Adjustment

Step

- Setting

Equipment: Frequency Counter	Board: AFM-6P board

- Connection


AUDIO
OSCILLATOR
BVW-400AP
AFM-6P
CH-1:TP35
CH-2:TP36
OSCILLOSCOPE
50-ohm
OUT
50-ohm
IN
MODULATION
ANALYZER

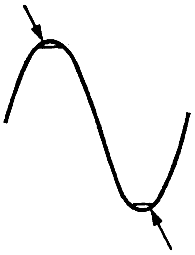
- Preparation

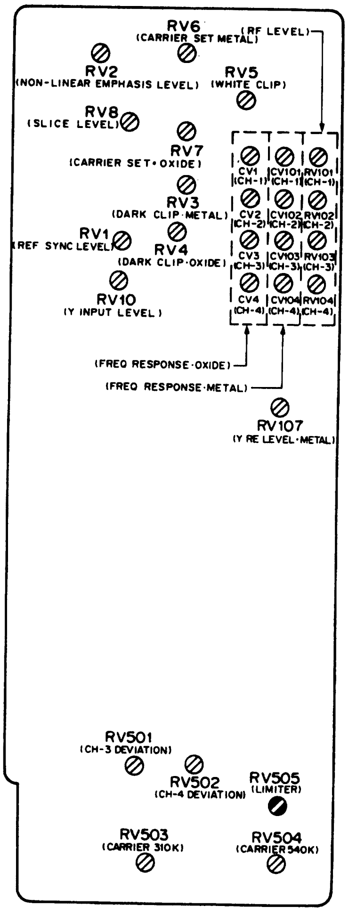
- S103/TC-48A→OFF
- S203/TC-48A→OFF
- AUDIO SELECT
  CH-1/CH-2 SW→MAN
- AUDIO IN CH-1/CH-2 SW →REAR MIC
- AUDIO IN CH-1/CH-2 connector: 400Hz, –40dBu (Ref. level +20dBu)
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : CH-1 : TP505/AFM-6P
  CH-2 : TP506/AFM-6P
- Adj. point : ⊘RV505/AFM-6P
- Spec. : 77±2kHz

The point where a wave-form starts to be distorted.




RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET•OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)

- Note

- After adjustment is completed, set the S103 and S203 on the TC-48A board to ON.

The video system adjustment method has been changed along with the changes of the video board (VDA-11). Adjust according to the serial number on the right.

Serial No.	Adjustment page
40001 through 41567	8-31~8-88

8-5. VIDEO SYSTEM ADJUSTMENT

〔Equipment〕

- Component signal Generator: TEKTRONIX TSG-300 or the equivalent
- Digital Voltmeter
- Dual trace Oscilloscope
- Frequency counter
- Sweep Generator
- Spectrum Analyzer
- DC power: AC-500 or the equivalent
- Waveform Vector Monitor: TEKTRONIX 1750 or the equivalent
- Standard VTR player: BVW-75P or the equivalent
- Rec Current Adj Tool (EW-571)
- Video signal Input Board: EW-573
- Blank tape: BCT-20G or BCT-20M
- Alignment Tape: CR5-2APS (8-960-098-44): OXIDE
  CR5-1BPS (8-960-096-91): METAL

〔Switches setting on the function panel〕
Do not change the setting below unless otherwise specified.

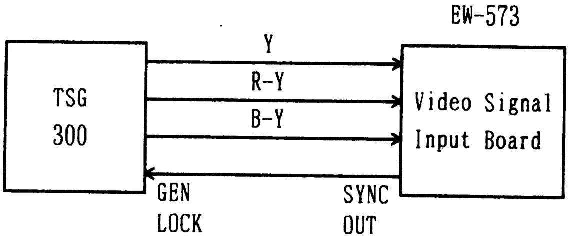
- VTR switch: STBY
- OUTPUT/DCC selector: BARS

*Alignment tape: CR5-2APS

TIME min.sec	VIDEO TRACK	DESCRIPTION
0:00	75% Color Bar	
3:00	Multi Burst	Y : 0.5,1,2,3,4.1,4.5 MHz C : 0.2,0.5,1,1.5 MHz
6:00	Bowtie & 10T	C : No Signal
9:00	Pulse & Bar	
11:00	Sw'P Shifted	
13:00 15:00	Composite Monoscope	Video Phase

〔Preparation〕 (When using the signal exept from the built-in color-bar.)

1. Remove the EN-79P board.
2. Insert the Video Signal Input Board and connect as illustrated below.



3. After adjustment is completed, install the EN-79P board and check (or readjust) Sec. 8-5-3 and 8-5-14 using a BARS signal from the camera.

*Alignment tape: CR5-1BPS

TIME min.sec	VIDEO	AFM
0:00	RF SWEEP Marker 1, 2, 4, 6, 8, 10, 12 MHz	No-Signal
2:00	60% H, SWEEP (CTDM) Marker 0.5, 1, 2, 3, 4, 5 MHz	
5:00	PULSE & BAR (CTDM)	
8:00	MULTI BURST Y : 0.5,1,2,4,5,5.5 MHz C : 0.2,0.5,1,1.5,2 MHz	
11:00	PULSE & BAR	
14:00	100% COLOR BARS	400Hz sine wave (25KHz deviation)
16:30		(75KHz deviation)
17:00	50% BOWTIE & 10T	No-Signal
19:00	LINE 17A SIGNAL	
22:00	QUAD PHASE	
24:00	FLAT FIELD	
26:00	100% COLOR BARS with dropout	
28:00 30:00	COMPOSITE H, SWEEP with VISC	

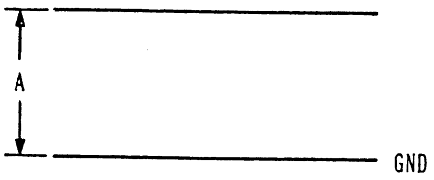
8-5-1. CCD Clock VCO Adjustment

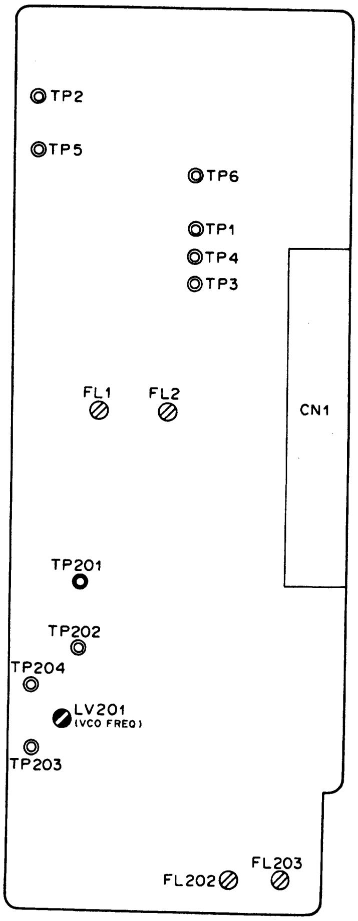
- Setting

Equipment: Dualscope Oscilloscope	Board: VDA-11P board

- Preparation
  - built-in color-bar
  - Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures
  - Test point : TP201/VDA-11P
  - Adj. point : LV201 (VCO FREQ)/VDA-11P
  - Spec. : A=2.5±0.05Vdc




TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201
(VCO FREQ)
TP203
FL203
FL202

VDA-11/P BOARD (COMPONENT SIDE)

8-5-2. CCD Clock Bias Adjustment

- Setting

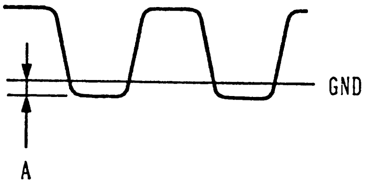
Equipment: Dualscope Oscilloscope	Board: VDA-11P board

- Preparation

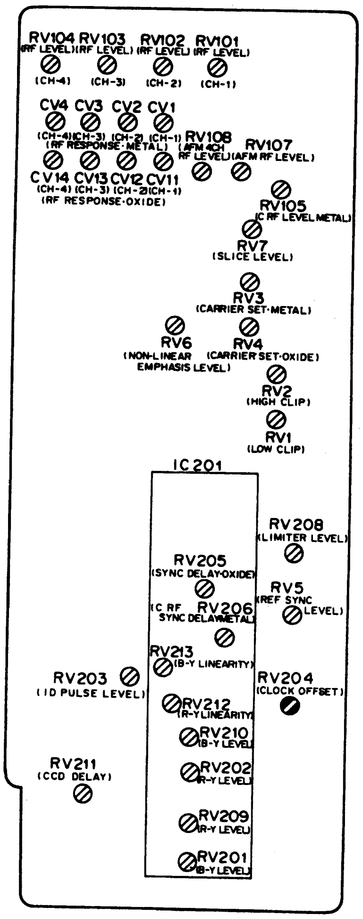
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

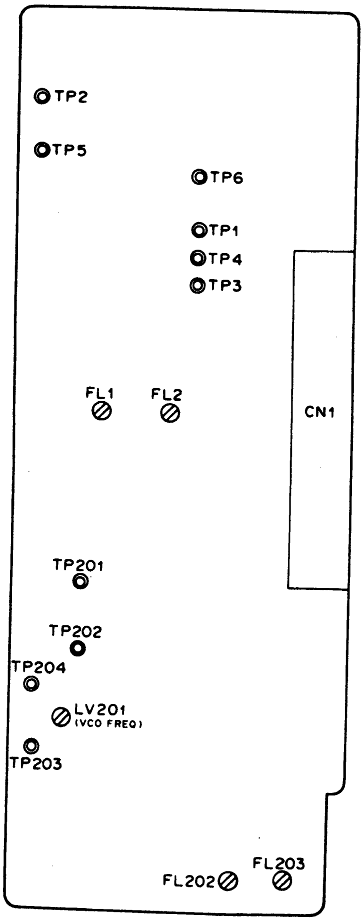
- Test point : TP202/VDA-11P
- Adj. point : RV204 (CLOCK OFFSET)/VDA-11P
- Spec. : A=–0.5±0.1Vdc



TRIG : HD/SG


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/11P BOARD (SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/11P BOARD (COMPONENT SIDE)

8-5-3. CCD Output Level Adjustment

- Setting

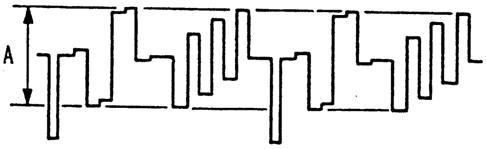
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

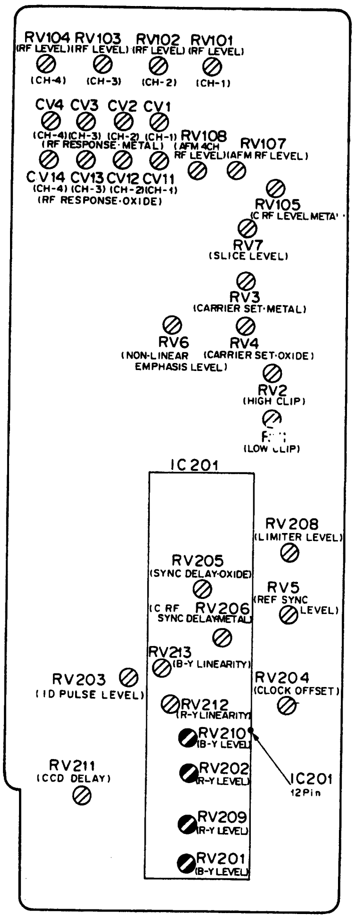
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

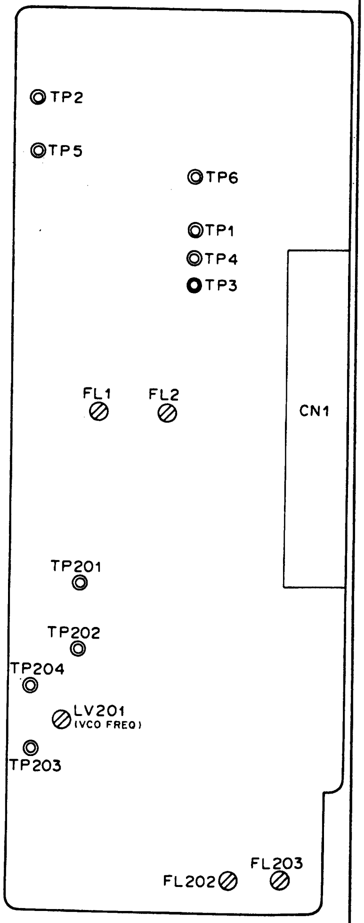
- Test point : TP3/VDA-11P
- Adj. point : B-Y Level
  - RV201 (B-Y LEVEL)/VDA-11P
  - RV209 (B-Y LEVEL)/VDA-11P
  - : R-Y Level
  - RV202 (R-Y LEVEL)/VDA-11P
  - RV210 (R-Y LEVEL)/VDA-11P
- Spec. : A = CCD output level in each channel = 0.5 ± 0.01V



TRIG : INT


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL META
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
(LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-4. High Chroma Slice Level Adjustment

- Setting

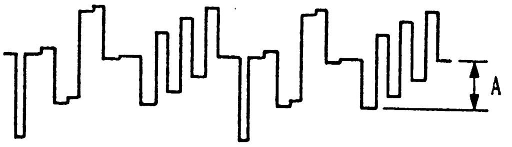
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

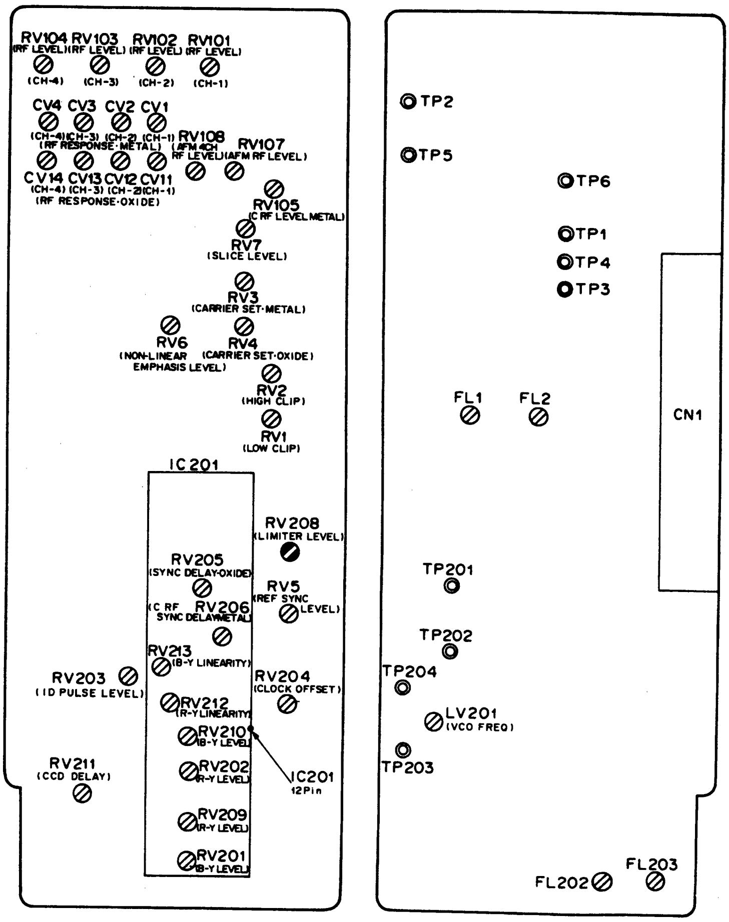
- Input signal: 75% color-bar (chroma: +6 dB)
- Insert the BCT-20M and put the unit into the REC mode.
- If the chroma level of the Signal Generator can not be +6dB, remove the R-Y, B-Y terminated resistors R3 and R4 on the Video Signal Input Board (EW-573) temporarily and perform the adjustment.

- Adjustment procedures

- Test point : TP3/VDA-11P
- Adj. point : RV208 (LIMITER LEVEL)/VDA-11P
- Spec. : A = 0.442 ± 0.05V



TRIG : INT


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)
TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(SOLDERING SIDE)   VDA-11/P BOARD(COMPONENT SIDE)

8-5-5. C REF Sync Level Adjustment

- Setting

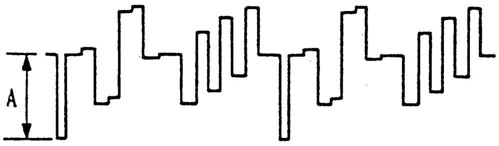
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

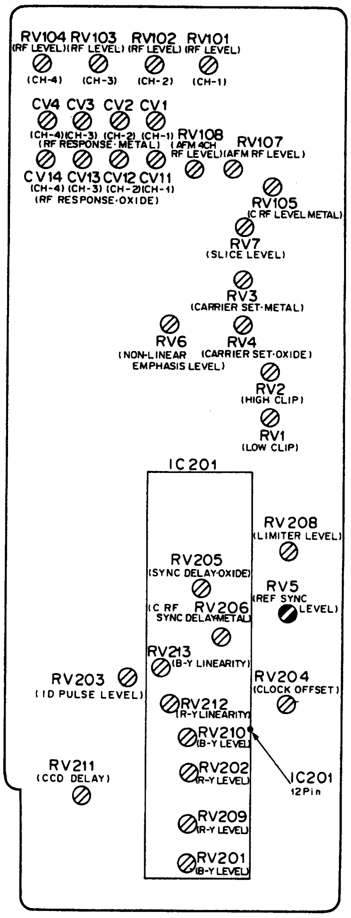
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

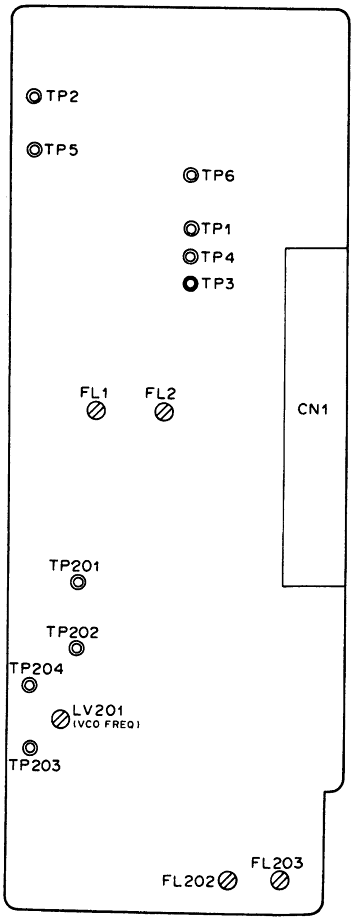
- Test point : TP3/VDA-11P
- Adj. point : RV5 (REF SYNC LEVEL)/VDA-11P
- Spec. : A = 0.598 ± 0.01V



TRIG : INT


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4)(CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2)(CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF RV206 SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-6. C REF Sync Trapezoid Adjustment

- Setting

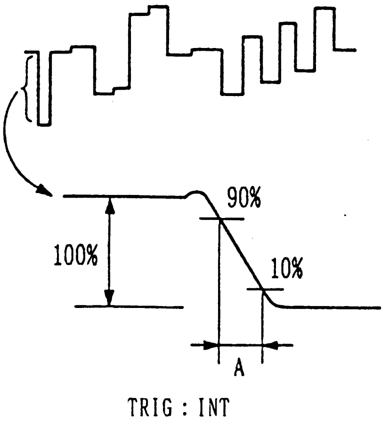
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

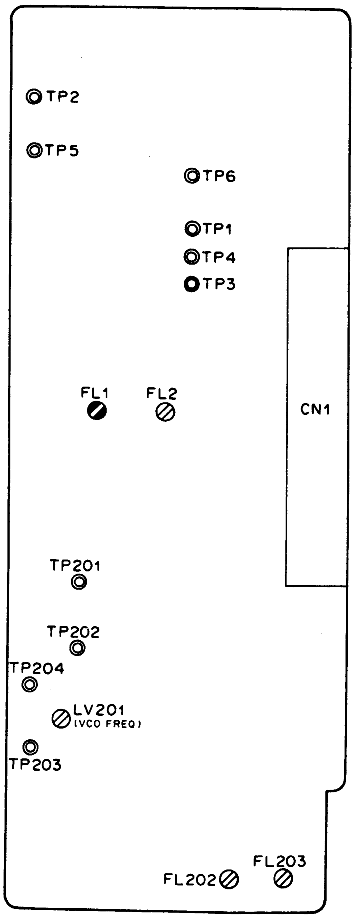
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP3/VDA-11P
- Adj. point : ⊘FL1/VDA-11P
- Spec. : A = 220±20nsec


90%
100%
10%
A
TRIG : INT


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201
(VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-7. ID Pulse Level Adjustment

- Setting

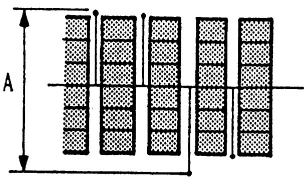
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

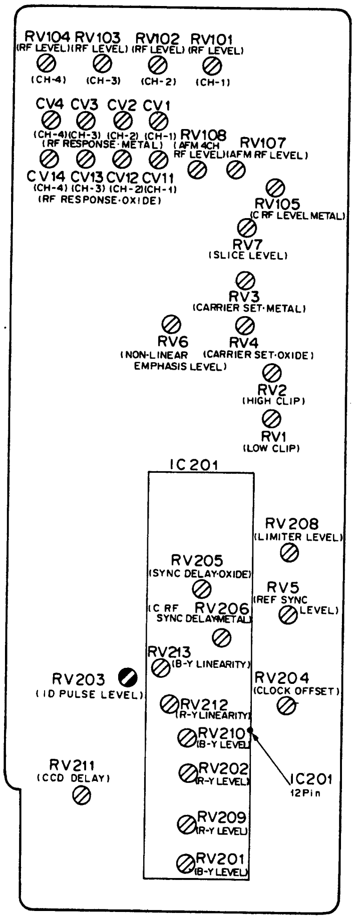
  - built-in color-bar
  - Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

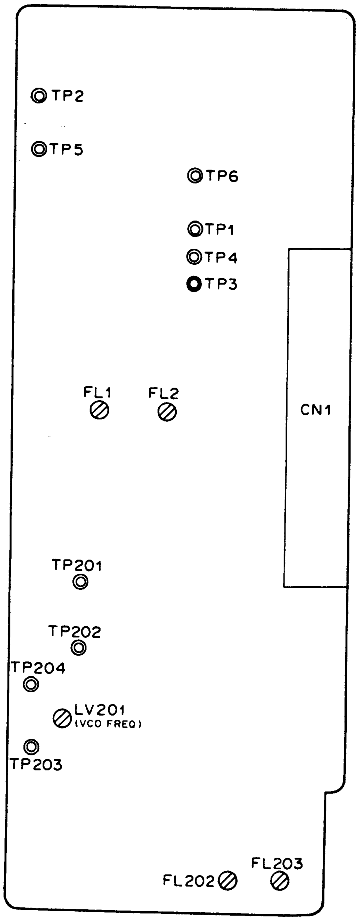
  - Test point : TP3/VDA-11P
  - Adj. point : ⊘RV203 (ID PULSE LEVEL)/VDA-11P
  - Spec. : A=0.5±0.05 V



TRIG : TP8/EXT BOARD


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY·METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-8. C Carrier/Deviation Adjustment

1) Adjustment using Spectrum Analyzer

Step.1

- Setting

Equipment: Spectrum Analyzer	Board: VDA-11P board

- Preparation

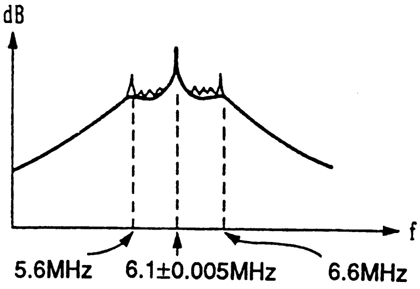
• built-in color-bar • Insert the BCT-20M and put the unit into the REC mode.

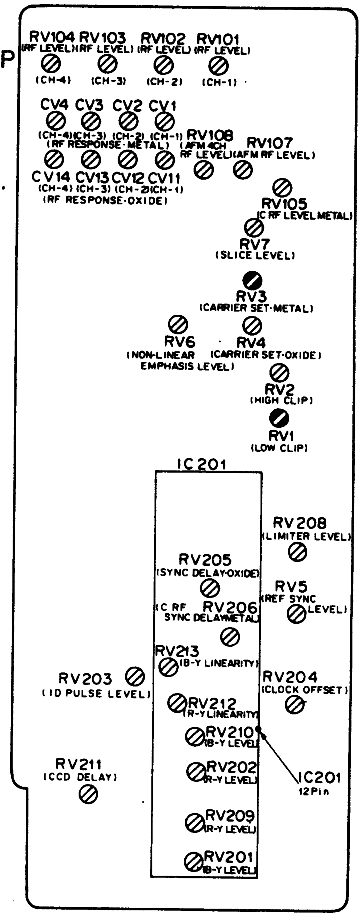
- Adjustment procedures

• Test point : TP5/VDA-11P

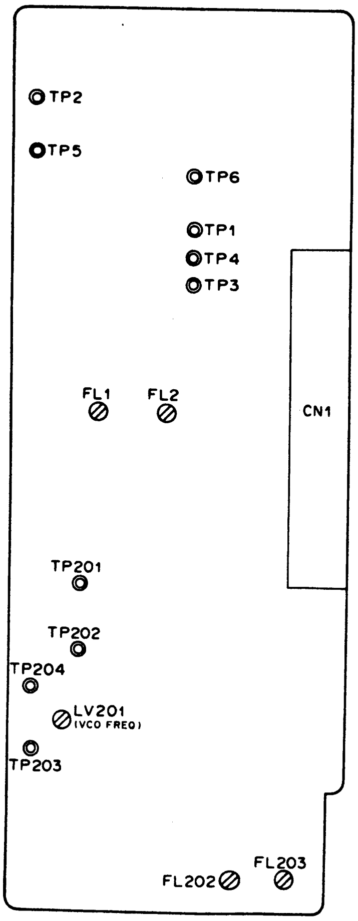
• Adj. point : Carrier adjustment
ØRV3
(CARRIER SET METAL)/VDA-11P
Deviation adjustment
ØRV1 (IC2)/VDA-11

• Spec. : Carrier adjustment
Set the center peak level to 6.1MHz.
: Deviation adjustment
Set the gap between the two peaks
(5.6MHz and 6.6MHz) to 1MHz.

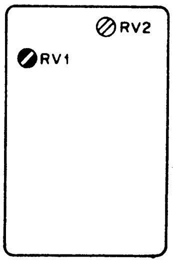



RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)



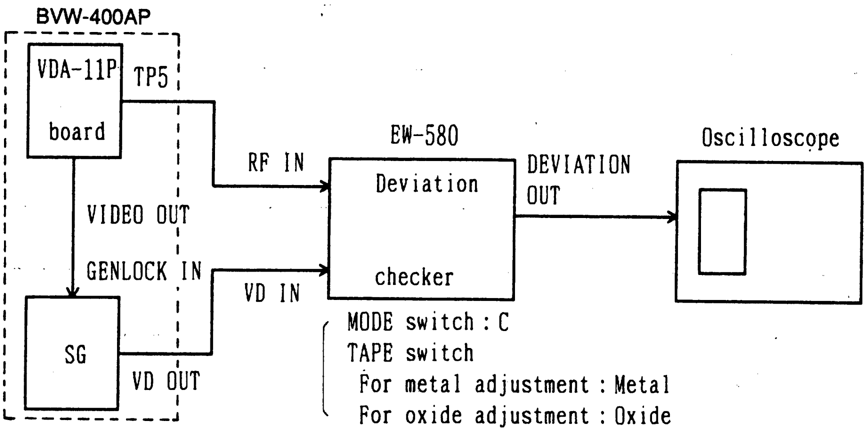
HIC (IC2)
(COMPONENT SIDE)
–On the VDA-11/11P Board–

2) Adjustment using Deviation Checker

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Connection

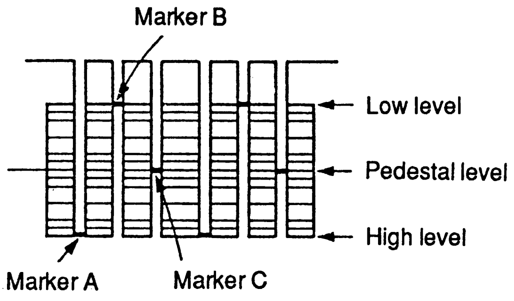

BVW-400AP
VDA-11P board
TP5
VIDEO OUT
GENLOCK IN
SG
VD OUT
RF IN
VD IN
EW-580
Deviation checker
DEVIATION OUT
Oscilloscope
MODE switch : C
TAPE switch
For metal adjustment : Metal
For oxide adjustment : Oxide

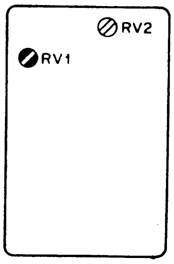
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.
- After metal adjustment is completed, insert the BCT-20G and put the unit into the REC mode.

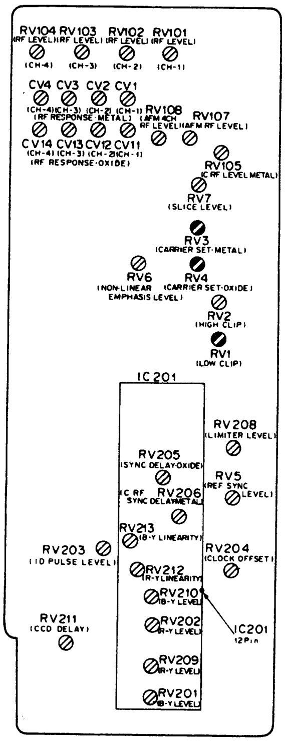
- Adjustment procedures

- Test point : DEVIATION OUT (DEVIATION CHECKER)
- Adj. point : • METAL
  Marker C adjustment (Carrier setting)
  ⊘RV3/VDA-11P
  Marker A and B adjustment (deviation)
  ⊘RV1 (IC2)/VDA-11P
  • OXIDE
  Marker C Adjustment (Carrier setting)
  ⊘RV4/VDA-11P
- Spec. : Procedure
  1. Set marker C to the pedestal level.
  2. Set marker A to the high level and marker B to the low level.
  3. Set oxide marker C to the pedestal level.


Marker B
Low level
Pedestal level
High level
Marker A
Marker C



HIC (IC2)
(COMPONENT SIDE)
–On the VDA-11/11P Board–


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD (SOLDERING SIDE)

Step 2

- Setting

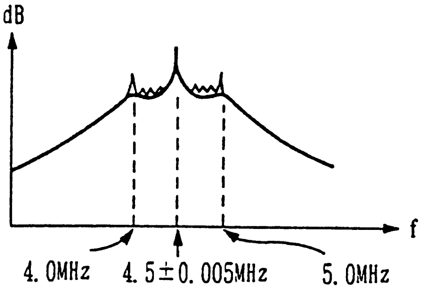
Equipment: Spectrum Analyzer	Board: VDA-11P board

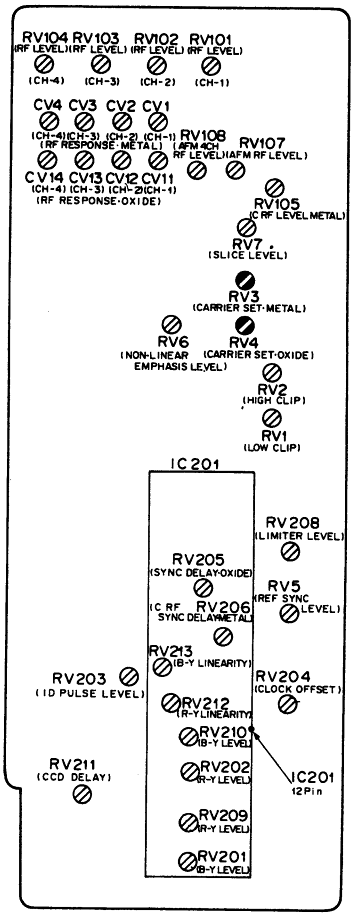
- Preparation

- built-in color-bar
- Insert the BCT-20G and put the unit into the REC mode.

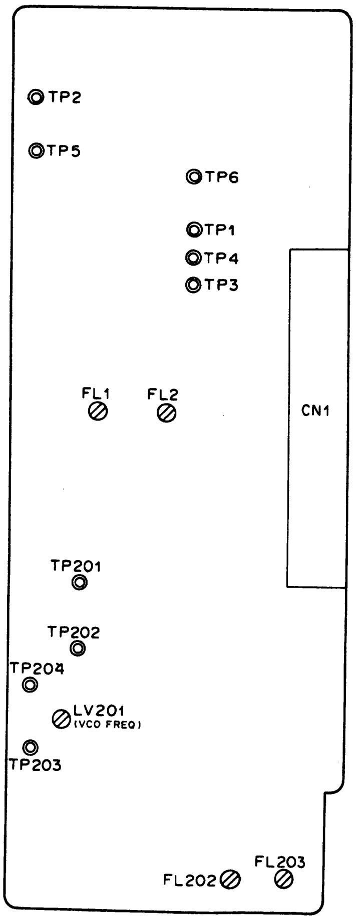
- Adjustment procedures

- Test point : TP5/VDA-11P
- Adj. point : Carrier adjustment
  ●RV4
  (CARRIER SET OXIDE)
  /VDA-11P
- Spec. : Carrier adjustment
  Set the center peak level to 4.5MHz.




RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-9. C Low Clip Adjustment

- Setting

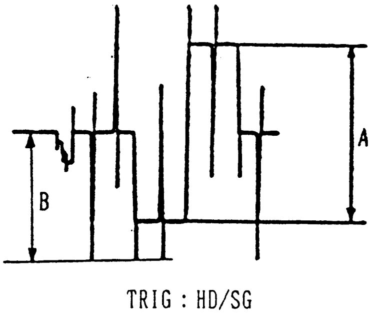
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

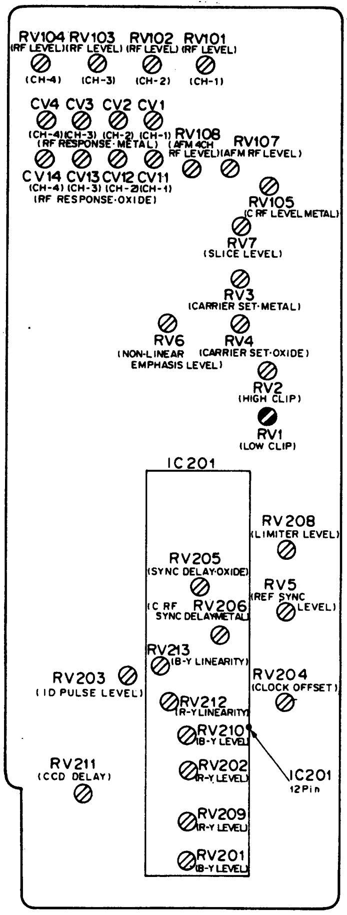
- Preparation

- Input signal: pulse & bar (3T, 2T)
- Insert the BCT-20G and put the unit into the REC mode.

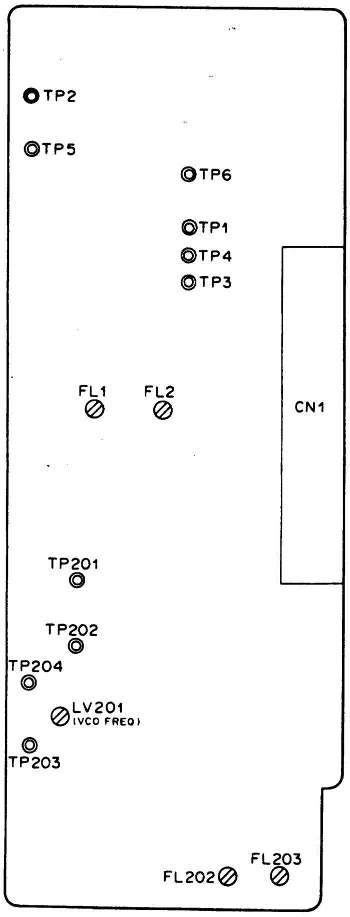
- Adjustment procedures

- Test point : TP2/VDA-11P
- Adj. point : ●RV1 (LOW CLIP)
  /VDA-11P
- Spec. : A = R-Y/B-Y level
  B = A × 130±5%


A
B
TRIG : HD/SG


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
FL2
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-10. C High Clip Adjustment

- Setting

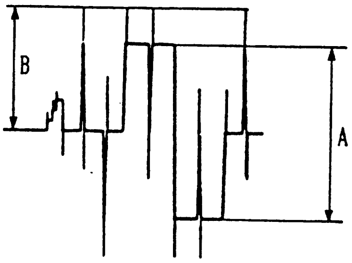
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

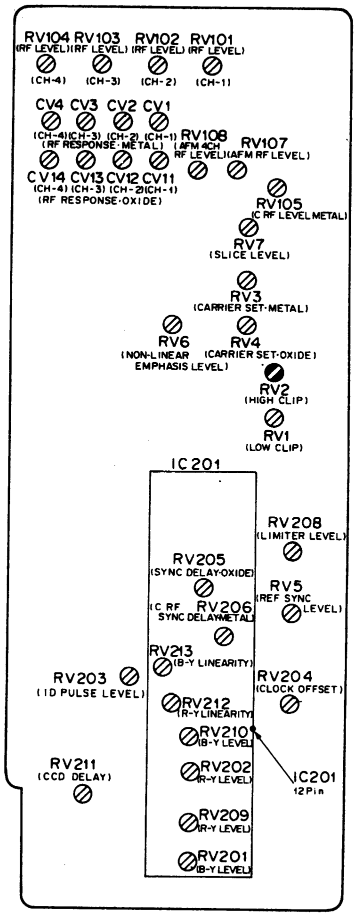
- Input signal: pulse & bar (3T, 2T)
- Insert the BCT-20M and put the unit into the REC mode.
- After level A is measured, set the chroma level to +6dB and adjust level B.

- Adjustment procedures

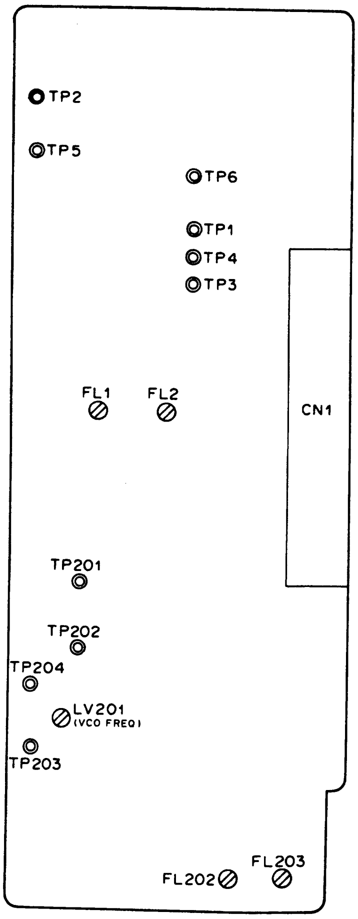
- Test point : TP2/VDA-11P
- Adj. point : ●RV2 (HIGH CLIP) /VDA-11P
- Spec. : A= R-Y/B-Y level
  B= A × 285±5%



TRIG : HD/SG


RV104 RV103 RV102 RV101
(RF LEVEL)(RF LEVEL) (RF LEVEL) (RF LEVEL)
(CH-4) (CH-3) (CH-2) (CH-1)
CV4 CV3 CV2 CV1
(CH-4)(CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108
(AFM 4CH RF LEVEL)
RV107
(AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2)(CH-1)
(RF RESPONSE·OXIDE)
RV105
(C RF LEVEL METAL)
RV7
(SLICE LEVEL)
RV3
(CARRIER SET·METAL)
RV6
(NON-LINEAR EMPHASIS LEVEL)
RV4
(CARRIER SET·OXIDE)
RV2
(HIGH CLIP)
RV1
(LOW CLIP)
IC201
RV208
(LIMITER LEVEL)
RV205
(SYNC DELAY·OXIDE)
RV5
(REF SYNC LEVEL)
RV206
(C RF SYNC DELAY·METAL)
RV213
(B-Y LINEARITY)
RV203
(ID PULSE LEVEL)
RV204
(CLOCK OFFSET)
RV212
(R-Y LINEARITY)
RV210
(B-Y LEVEL)
RV211
(CCD DELAY)
RV202
(R-Y LEVEL)
IC201
12Pin
RV209
(R-Y LEVEL)
RV201
(B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201
(VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

- Note

- If the chroma level of the signal generator can not be +6dB, remove the R-Y, B-Y terminated resistors R3 and R4 on the Video Signal Input Board (EW-573) temporarily and perform the adjustment.

8-5-11. C Nonlinear Emphasis Level Adjustment

- Setting

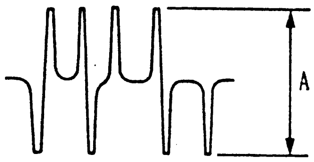
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

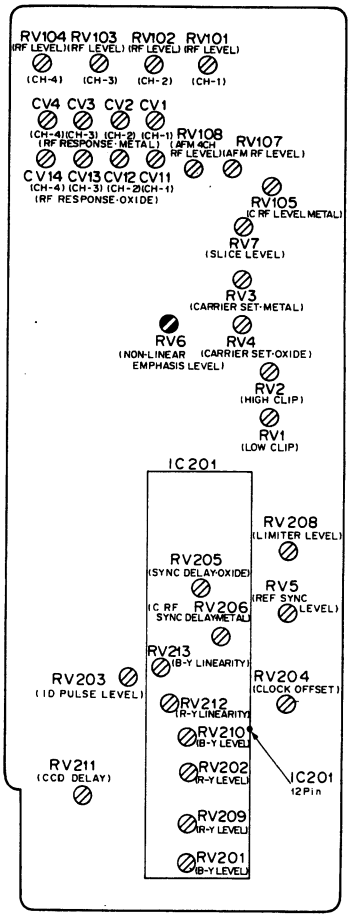
- Input signal: pulse & bar (3T, 2T)
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

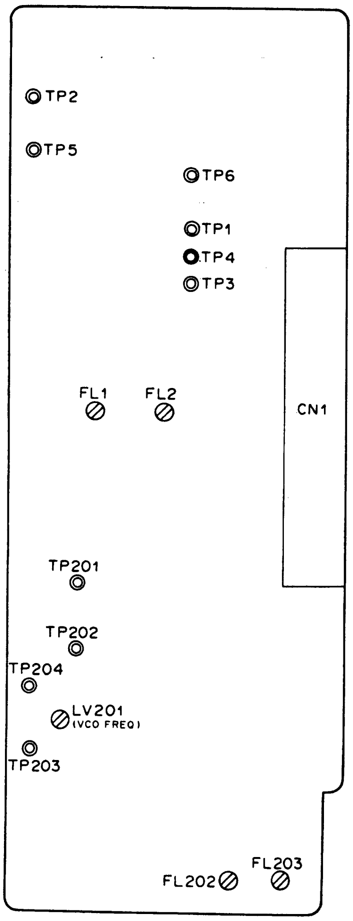
- Test point : TP4/VDA-11P
- Adj. point : RV6 (NON-LINEAR EMPHASIS LEVEL)/VDA-11P
- Spec. : A=76±2mV



TRIG : HD/SG


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-12. C REC HF Adjustment

- Setting

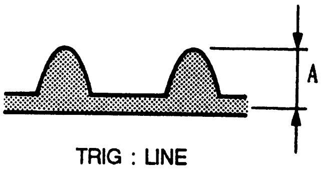
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

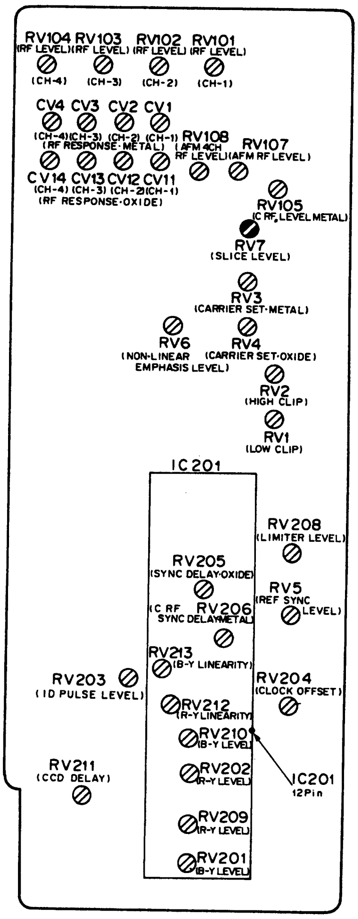
- Y, B-Y input signal: 0% flat field
- R-Y input signal: H sweep (For only RF, 1Vp-p/75ohms) TP-39/Extention board.
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

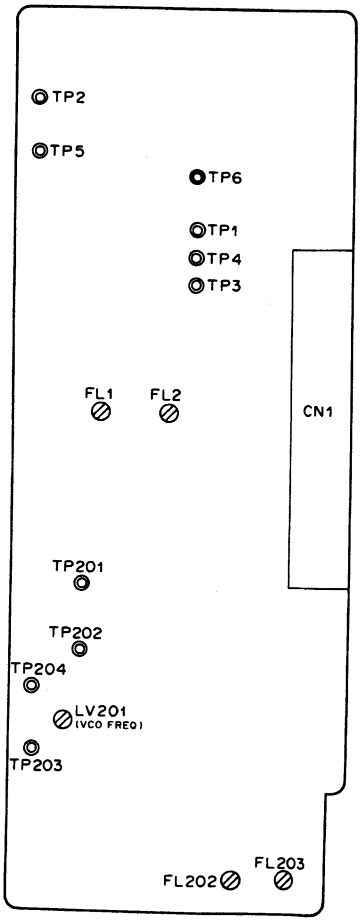
- Test point : TP6/VDA-11P
- Adj. point : ⊘RV7 (SLICE LEVEL)/VDA-11P
- Spec. : A=60±2mVp-p (Measured at hte waveform center.)



TRIG : LINE


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4)(CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2)(CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY·METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL203
FL202

VDA-11/P BOARD(COMPONENT SIDE)

8-5-13. C MOD Carrier Balance Adjustment

- Setting

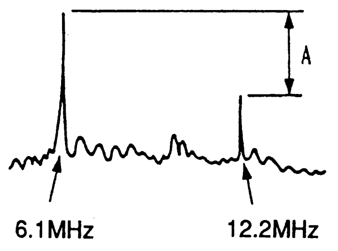
Equipment: Spectrum Analyzer	Board: VDA-11P board

- Preparation

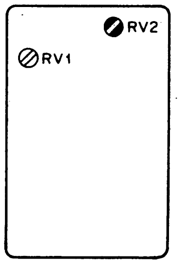
- Input signal: 0% flat field
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

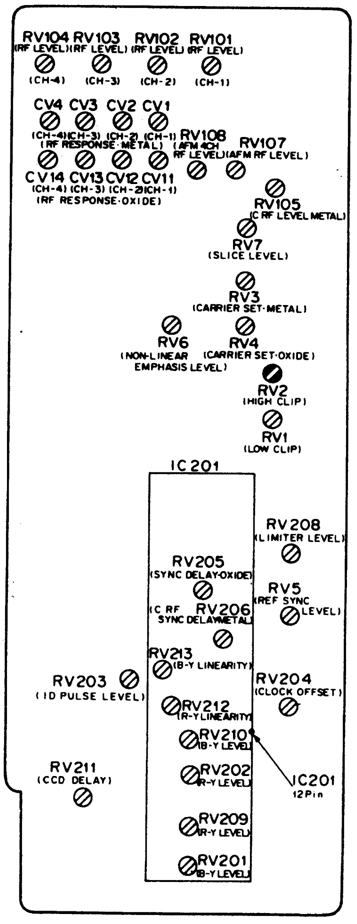
- Test point : TP5/VDA-11P
- Adj. point : ●RV2 (IC2)/VDA-11P
- Spec. : Minimize the level at 10.6MHz. (A=40dB or more)



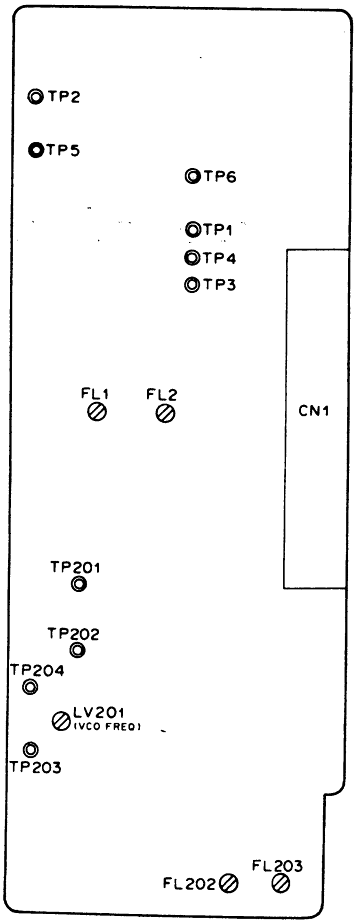
TRIG : INT



HIC (IC2)
(COMPONENT SIDE)
–On the VDA-11/11P Board–


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD (SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD (COMPONENT SIDE)

8-5-14. Y Input Level Adjustment

- Setting

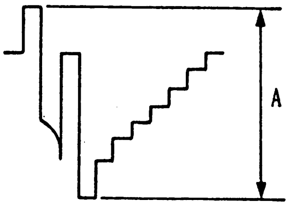
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Preparation

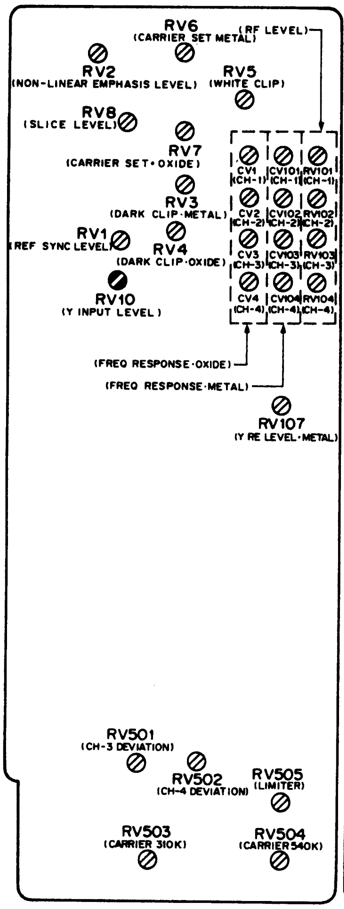
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

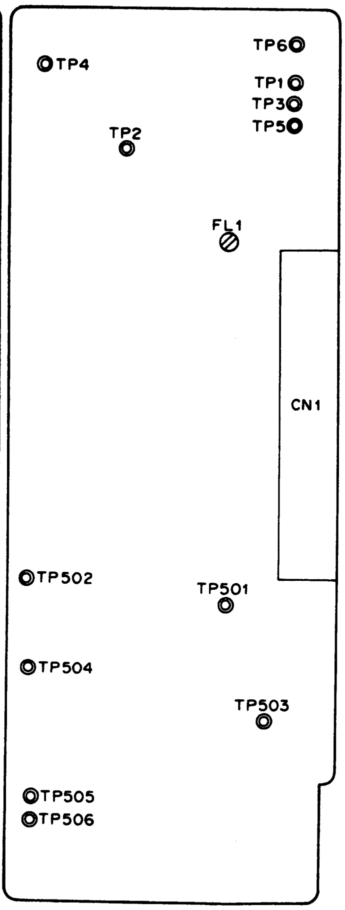
- Test point : TP5/AFM-6P
- Adj. point : ⊘RV10 (Y LEVEL)/AFM-6P
- Spec. : A=1.0±0.02V



TRIG : INT


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET・OXIDE)
RV3
(DARK CLIP・METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP・OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE・OXIDE)
(FREQ RESPONSE・METAL)
RV107
(Y RE LEVEL・METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

8-5-15. Y REF Sync Level Adjustment

- Setting

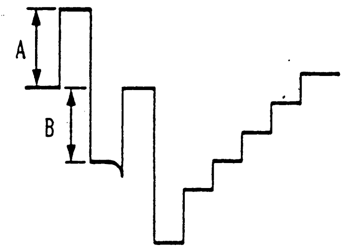
Equipment: Dualtrace Oscilloscop	Board: AFM-6P board

- Preparation

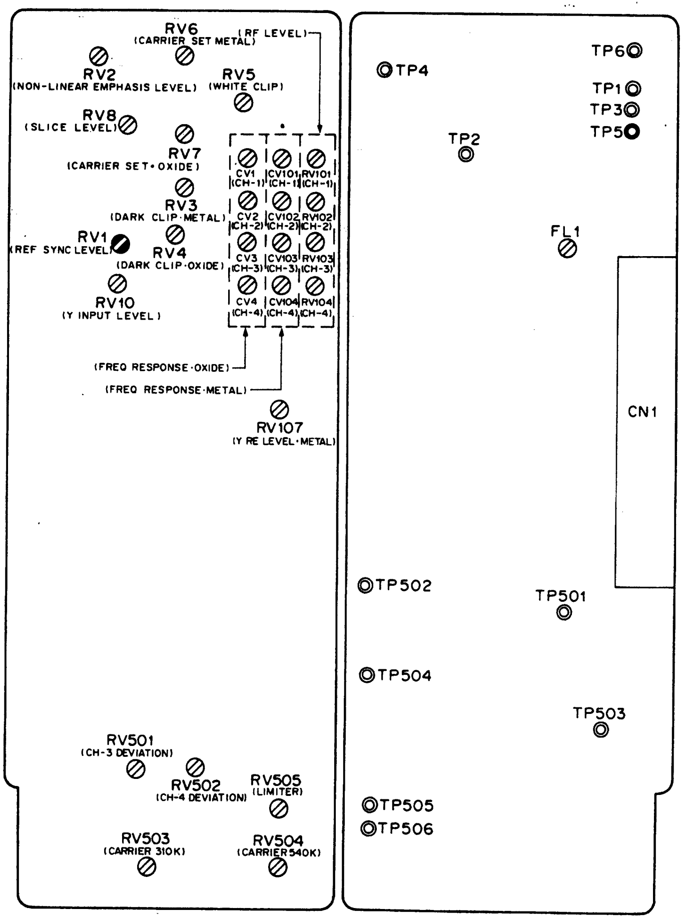
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP5/AFM-6P
- Adj. point : ⊘RV1 (REF SYNC LEVEL)/AFM-6P
- Spec. : A:B=100:125±2.5%



TRIG : INT


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET·OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RF LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-16. Y REF Sync Slant Adjustment

- Setting

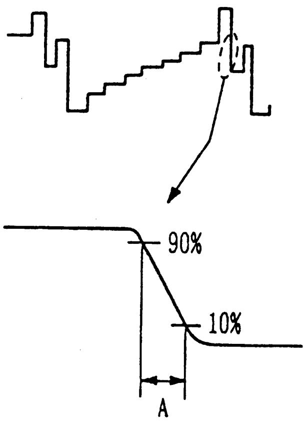
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Preparation

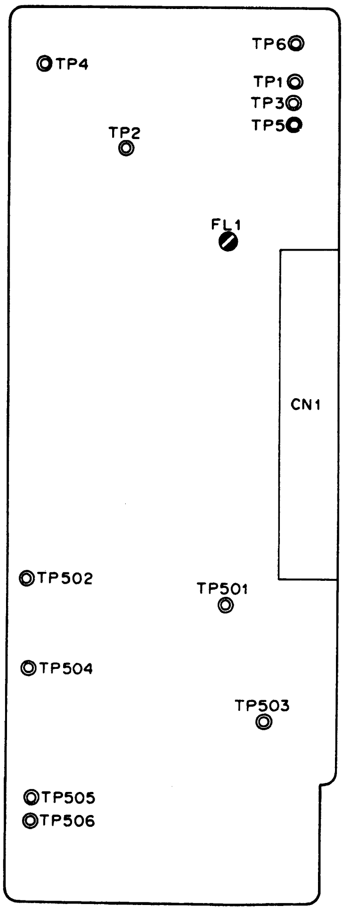
- Built-in-color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP5/AFM-6P
- Adj. point : ⊘FL1/AFM-6P
- Spec. : A=180±20nsec



TRIG : INT


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD (COMPONENT SIDE)

8-5-17. Y Carrier/Deviation Adjustment

1) Adjustment using Spectrum Analyzer

Step 1

- Setting

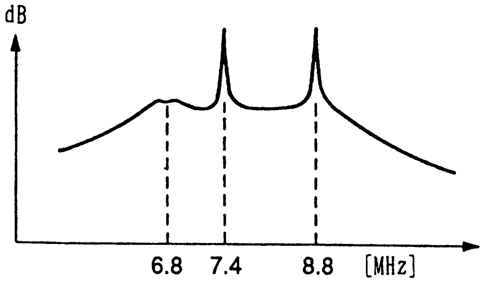
Equipment: Spectrum Analyzer	Board: AFM-6P board

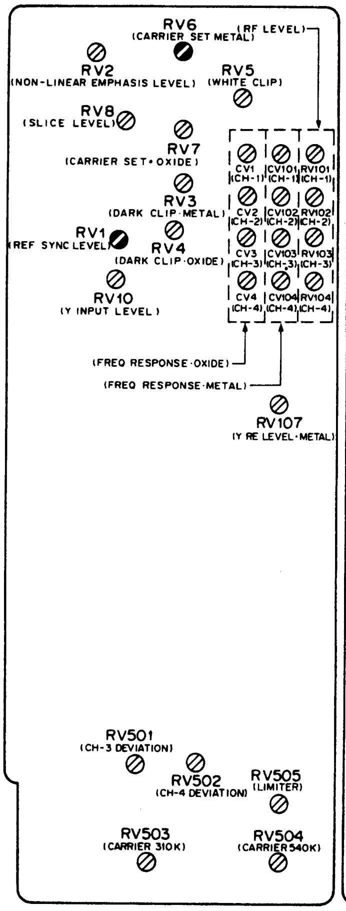
- Preparation

- Input signal: Color-bar
- Insert the BCT-20M and put the unit into the REC mode.

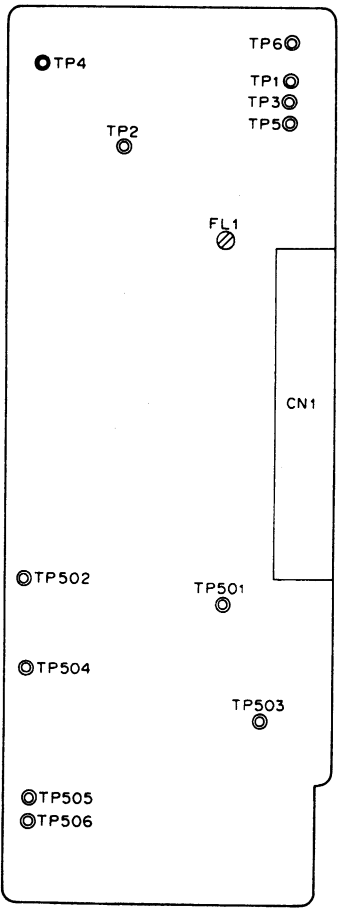
- Adjustment procedures

- Test point : TP4/AFM-6P
- Adj. point : Sync tip carrier adjustment
  ●RV6 (CARRIER SET METAL)/AFM-6P
  : Deviation adjustment
  ●RV1/AFM-6P
- Spec. : Sync tip carrier adjustment
  Set the left side peak level to 6.8MHz.
  : Deviation adjustment
  Set the gap between two peaks to 1.4MHz.

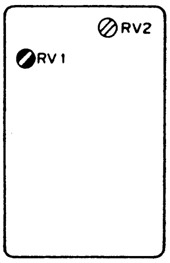



RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET•OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD (SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD (COMPONENT SIDE)



HIC (IC 1)
(COMPONENT SIDE)
- On the AFM-6/P Board -

Step 2

- Setting

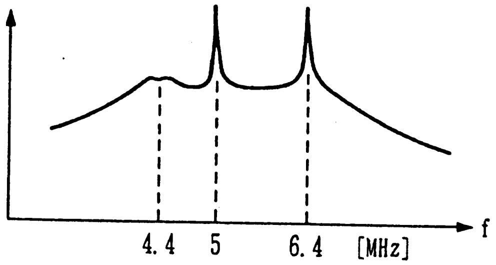
Equipment: Spectrum Analyzer	Board: AFM–6P board

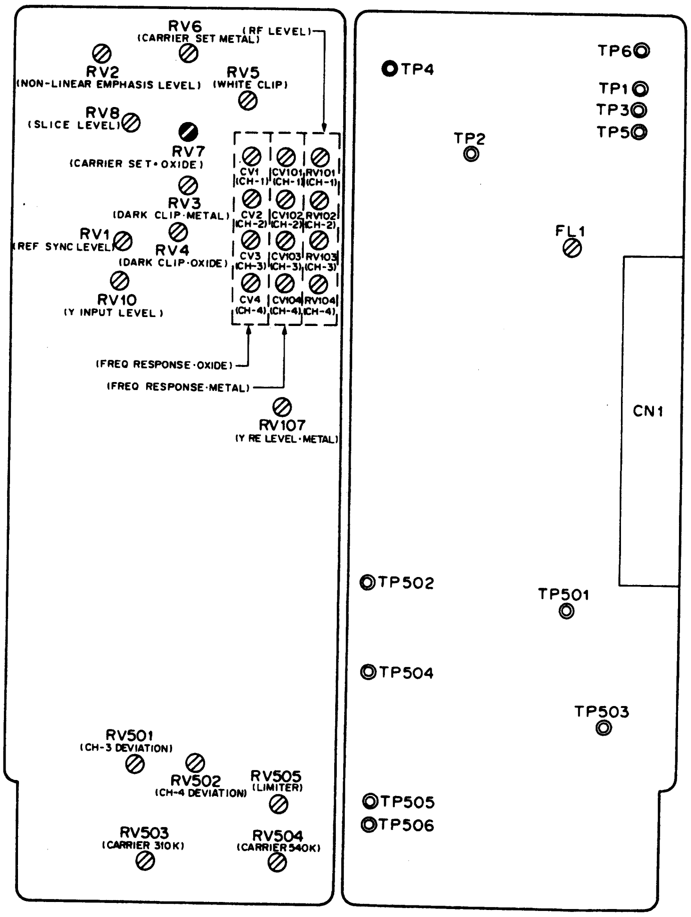
- Preparation

- Input signal: Color-bar
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP4/AFM-6P
- Adj. point : Sync tip carrier adjustment
  ⊘ RV7 (CARRIER SET OXIDE)/AFM-6P
- Spec. : Sync tip carrier adjustment
  Set the left side peak level to 4.4 MHz.




RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1
(CH-1)
CV101
(CH-1)
RV101
(CH-1)
CV2
(CH-2)
CV102
(CH-2)
RV102
(CH-2)
CV3
(CH-3)
CV103
(CH-3)
RV103
(CH-3)
CV4
(CH-4)
CV104
(CH-4)
RV104
(CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

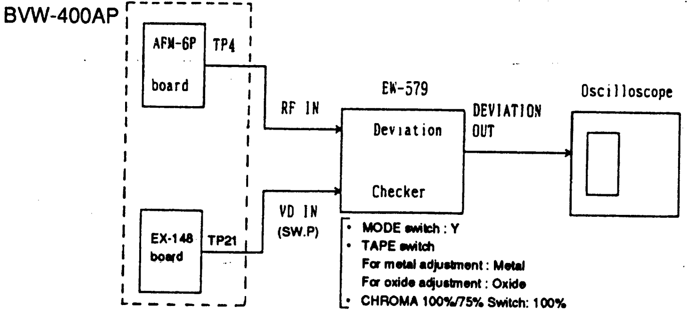
AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

2) Adjustment Using Deviation Checker

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Connection


BVW-400AP
AFM-6P board
TP4
EX-148 board
TP21
RF IN
VD IN (SW.P)
EW-579
Deviation Checker
DEVIATION OUT
Oscilloscope

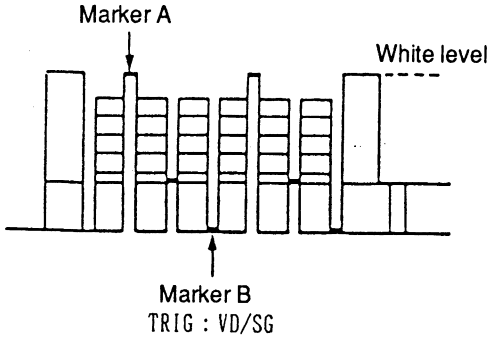
- MODE switch : Y
- TAPE switch
  For metal adjustment : Metal
  For oxide adjustment : Oxide
- CHROMA 100%/75% Switch: 100%

- Preparation

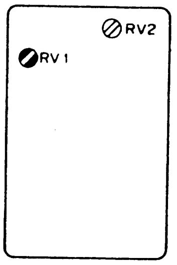
- Built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.
- After metal adjustment is completed, insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

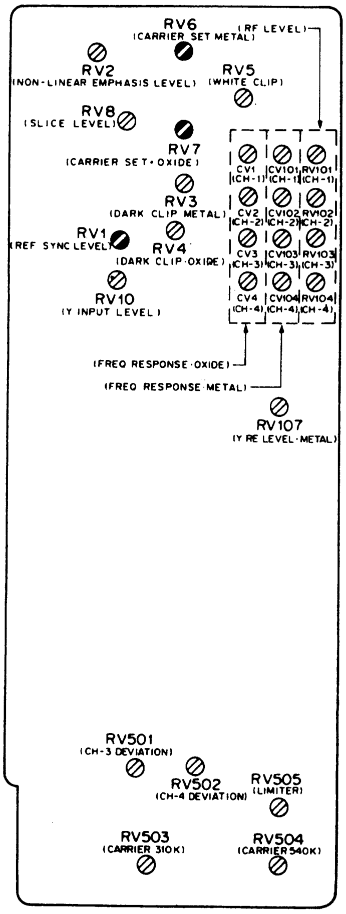
- Test point : DEVIATION OUT (DEVIATION CHECKER)
- Adj. point : METAL
  Marker B adjustment (CARRIER SETTING)
  ● RV6 /AFM-6P
  Marker A adjustment (DEVIATION)
  ● RV1/AFM-6P
  : OXIDE
  Marker B adjustment (CARRIER SETTING)
  ● RV7 /AFM-6P
- Spec. : Procedure
  1. Set marker B to the sync tip level.
  2. Set marker A to the white peak level.
  3. Set oxide marker B to the sync tip level.


Marker A
White level
Marker B

TRIG : VD/SG



HIC (IC1)
(COMPONENT SIDE)
–On the AFM-6/6P Board–


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET·OXIDE)
RV3
(DARK CLIP METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD (SOLDERING SIDE)

8-5-18. Y Dark Clip Adjustment

• Setting

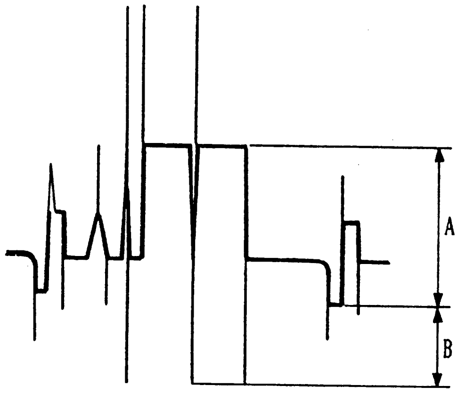
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

• Preparation

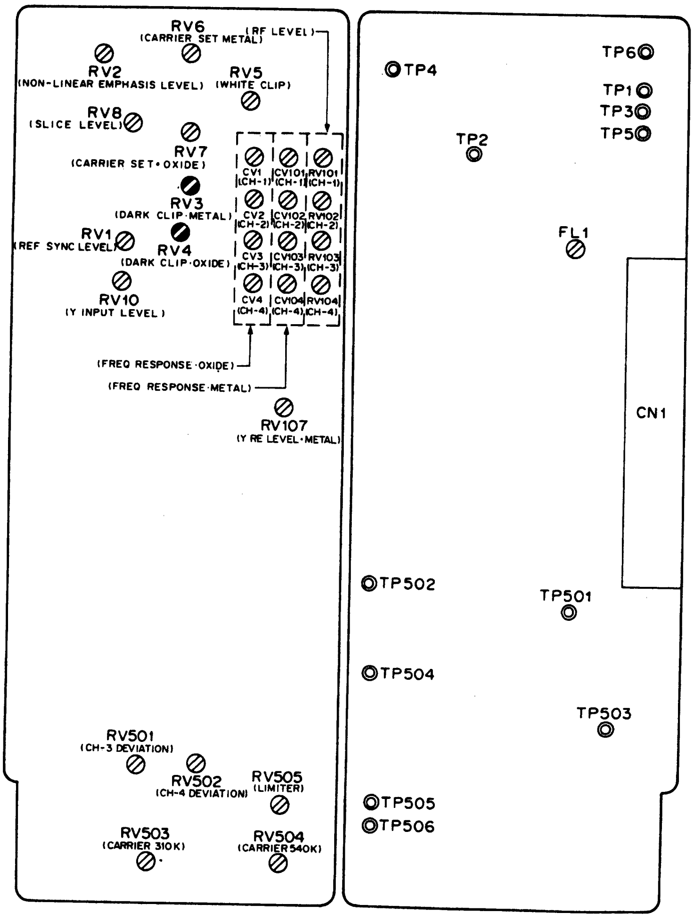
- Input signal: MOD pulse & bar
- Metal: Insert the BCT-20M and put the unit into the REC mode.
- Oxide: Insert the BCT-20G and put the unit into the REC mode.

• Adjustment procedures

- Test point : TP2/AFM-6P
- Adj. point : ⊘ RV3 (DARK CLIP METAL) /AFM-6P
  ⊘ RV4 (DARK CLIP OXIDE) /AFM-6P
- Spec. : B = A × 150 ± 2.5% (METAL)
  B = A × 65 ± 2.5% (OXIDE)



TRIG : HD/SG


RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET・OXIDE)
RV3 (DARK CLIP・METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP・OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE・OXIDE)
(FREQ RESPONSE・METAL)
RV107 (Y RE LEVEL・METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-19. Y White Clip Adjustment

- Setting

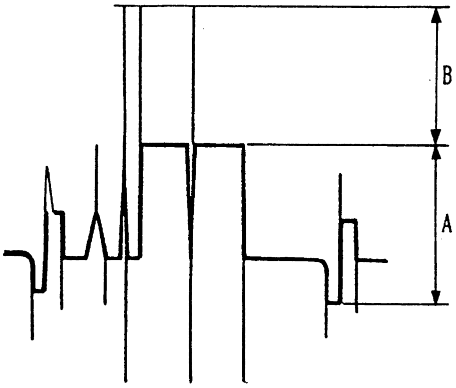
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

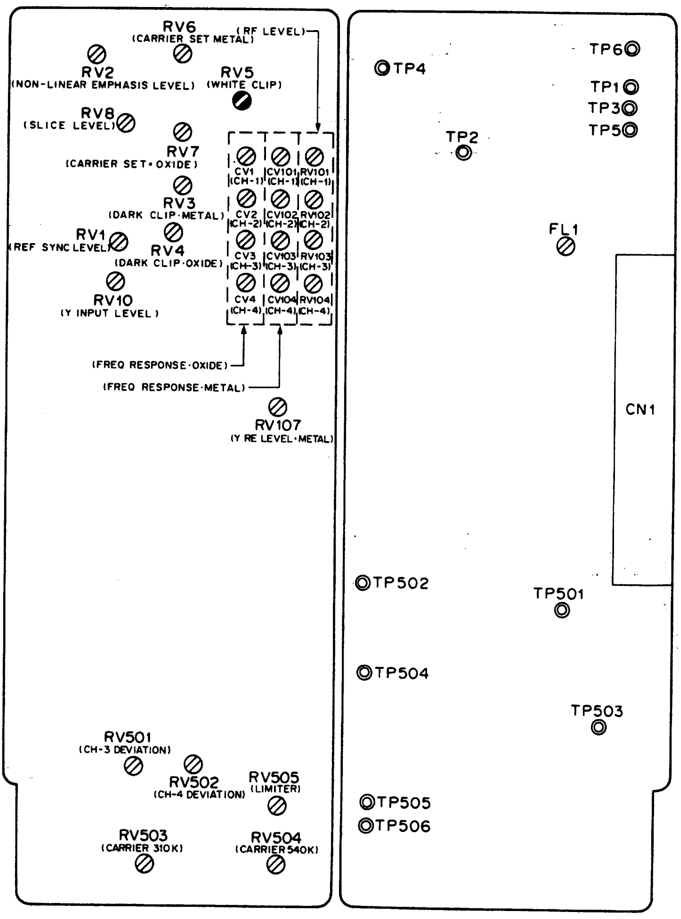
- Input signal: MOD pulse and bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP2/AFM-6P
- Adj. point : ⊘ RV5 (WHITE CLIP) /AFM-6P
- Spec. : A = VS level
  B = A × 130 ± 2.5%



TRIG : HD/SG


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET•OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-20. Y Nonlinear Emphasis Level Adjustment

- Setting

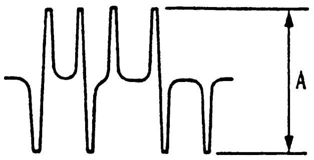
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

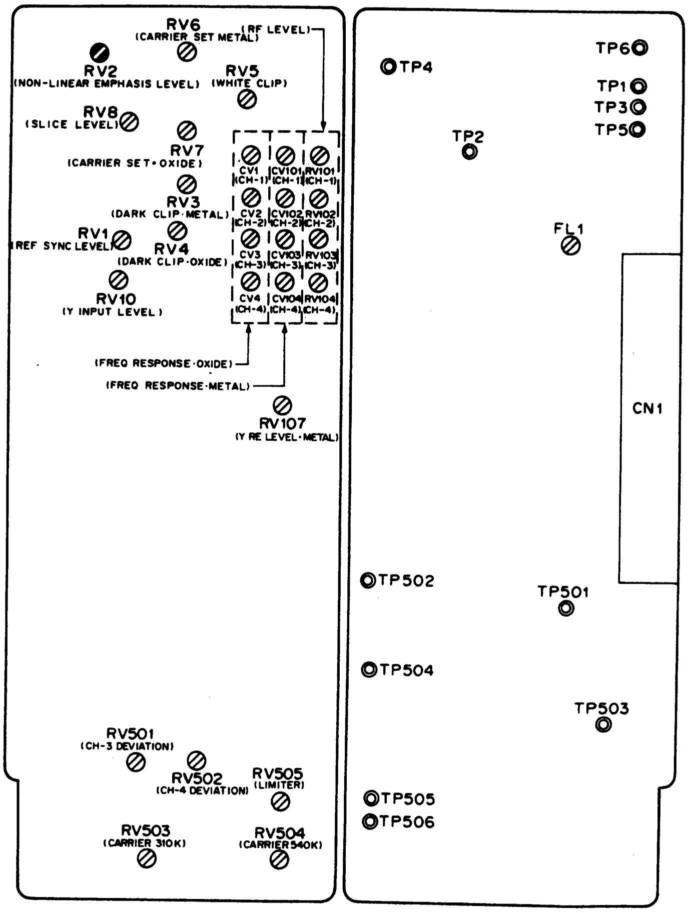
- Input signal: MOD pulse and bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP3/AFM-6P
- Adj. point : ⊘ RV2 (NON-LINEAR EMPHASIS) /AFM-6P
- Spec. : A = 90 ± 2mV



TRIG : HD/SG


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1
(CH-1)
CV101
(CH-1)
RV101
(CH-1)
CV2
(CH-2)
CV102
(CH-2)
RV102
(CH-2)
CV3
(CH-3)
CV103
(CH-3)
RV103
(CH-3)
CV4
(CH-4)
CV104
(CH-4)
RV104
(CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-21. Y REC HF Adjustment

- Setting

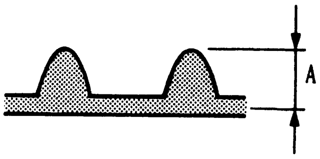
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

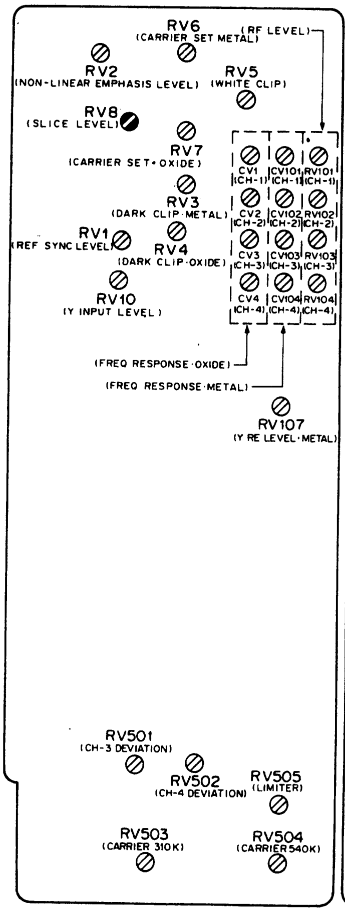
- Preparation

- Y input signal: H sweep (Sweep signal 115IRE and sync signal 40IRE/75-ohms termination)
  TP9/Extension board: AFM-6P
- Insert the BCT-20M and put the unit into the REC mode.

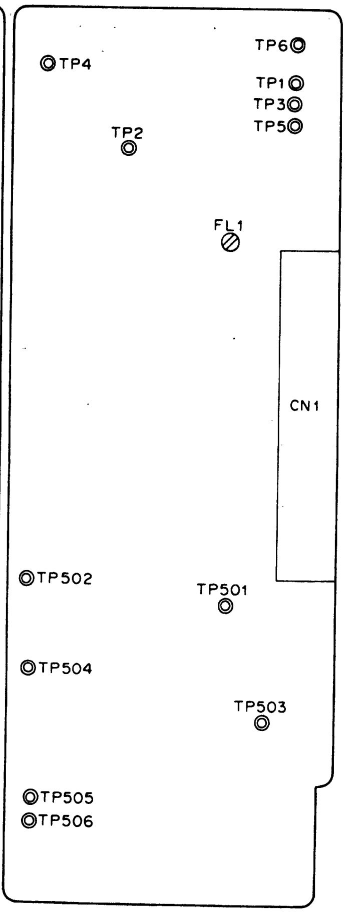
- Adjustment procedures

- Test point : TP6/AFM-6P
- Adj. point : ● RV8 (SLICE LEVEL)/AFM-6P
- Spec. : A = 150 ± 5mV
  (Measured at the waveform center.)




RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET•OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

8-5-22. Y MOD Carrier Balance Adjustment

- Setting

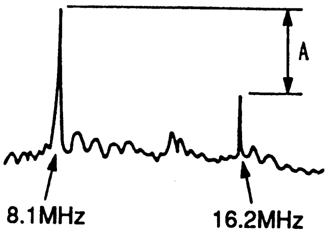
Equipment: Spectrum Analyzer	Board: AFM–6P board

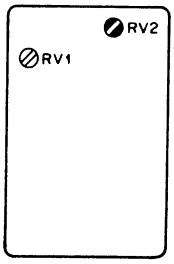
- Preparation

- Input signal: 50% flat field
- Insert the BCT-20M and put the unit into the REC mode.

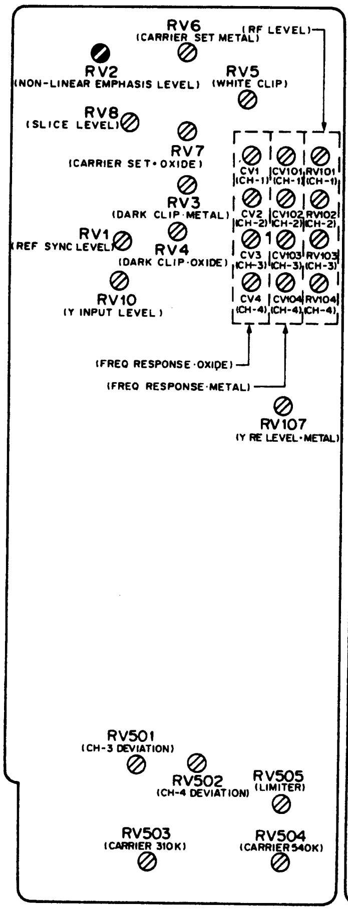
- Adjustment procedures

- Test point : TP4/AFM-6P
- Adj. point : ⊘ RV2 (IC1)/AFM-6P
- Spec. : Minimize the level at 14MHz.
  (A = 40dB or more)

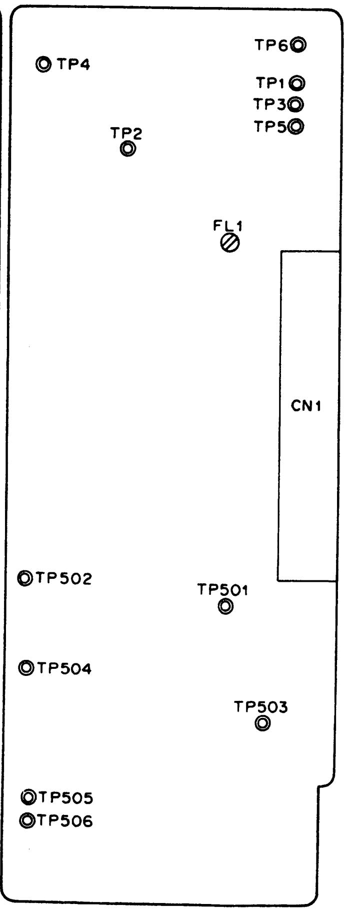




HIC (IC1)
(COMPONENT SIDE)
–On the AFM-6/6P Board–


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET・OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

8-5-23. Y REC Current Tentative Adjustment (Oxide)

- Setting

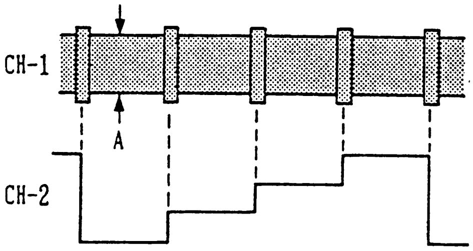
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Preparation

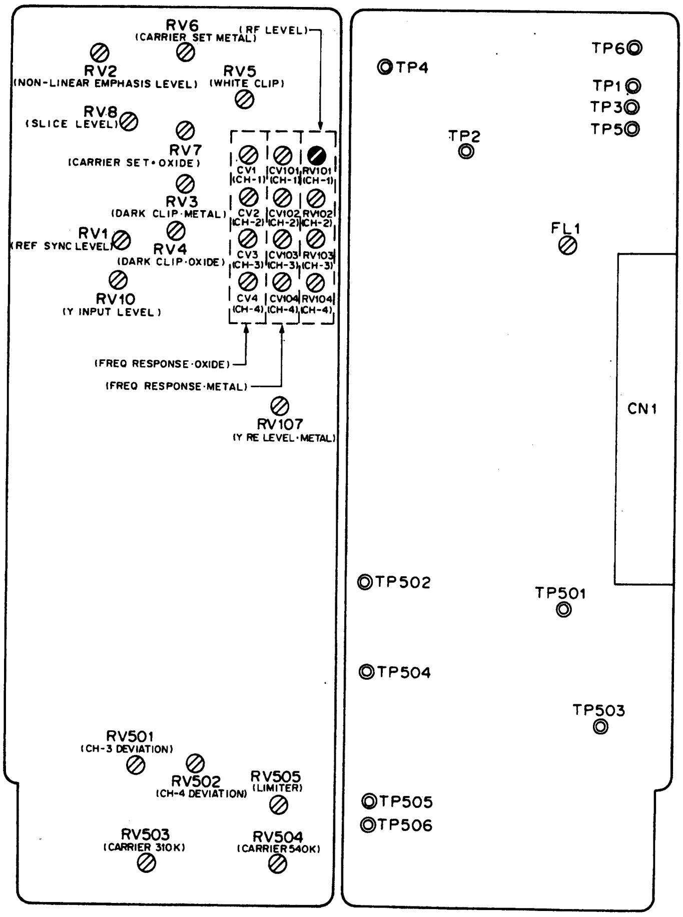
- Input signal: 50% flat field
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

- Test point : CH1: TP32/Extension board
  CH2: TP7/Extension board
- Adj. point : ⊘ RV101 (CH-1 RF LEVEL) /AFM-6P
- Spec. : A = 800 ± 20mV



TRIG : CH-2


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET·OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

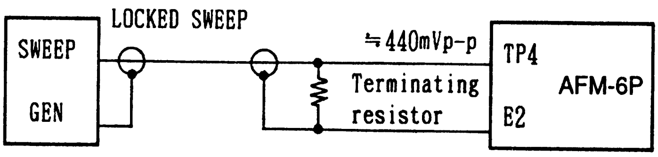
AFM-6/P BOARD (SOLDERING SIDE) AFM-6/P BOARD (COMPONENT SIDE)

8-5-24. Y REC Current Frequency Response Adjustment (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Connection


SWEEP
GEN
LOCKED SWEEP
≒440mVp-p
Terminating resistor
TP4
E2
AFM-6P

- Preparation

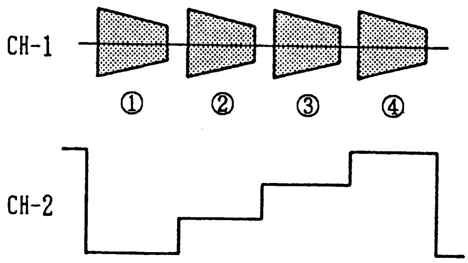
- Remove short-housing CNJ2 on the AFM-6P board, connect the Sweep Signal Generator between TP4 on the AFM-6P board and E2 on the AFM-6P board and supply a locked sweep signal.
- Insert the BCT-20G and put the unit into the REC PAUSE mode.
- After adjustment is completed, install short-housing CNJ2.

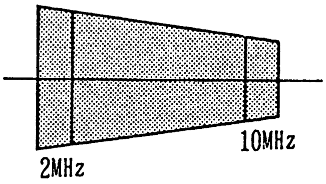
- Adjustment procedures

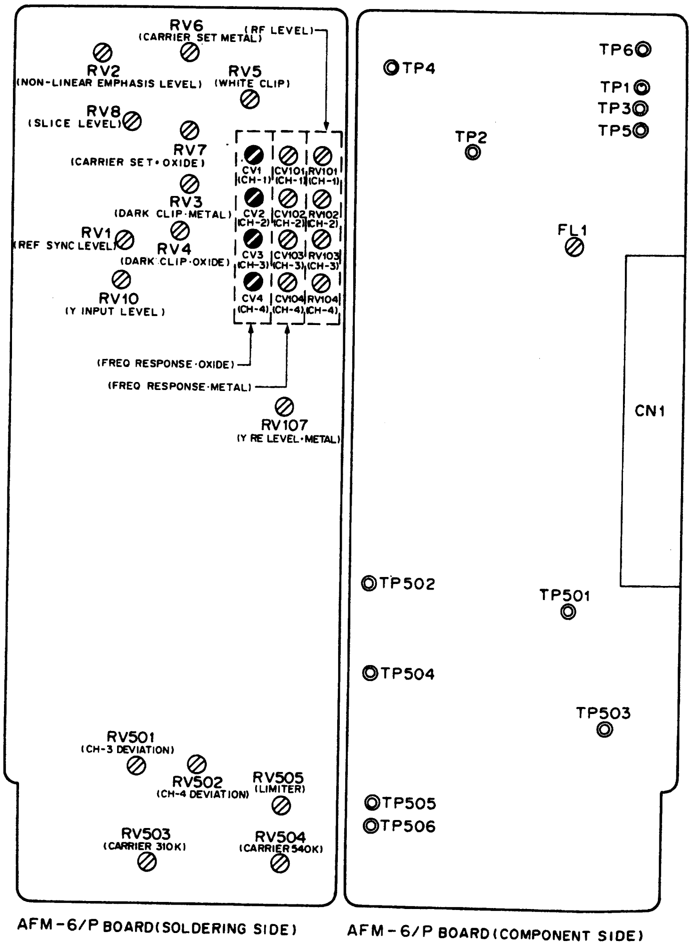
- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point :① : ⊘ CV1/AFM-6P
  ② : ⊘ CV2/AFM-6P
  ③ : ⊘ CV3/AFM-6P
  ④ : ⊘ CV4/AFM-6P
- Spec. :

frequency	level
2 MHz	100% reference
10 MHz	90^{+5}_{-15} %

TRIG: TP7/Extension board






RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET•OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-25. Y REC Current Adjustment (Oxide)

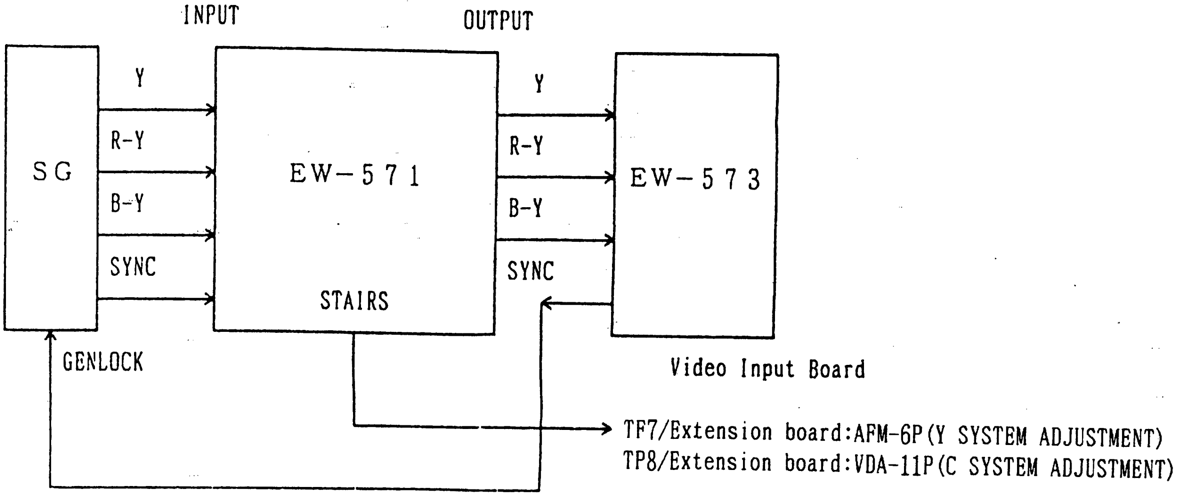
Step 1.

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Connection

REC CURRENT ADJ. TOOL


INPUT
OUTPUT
SG
Y
R-Y
B-Y
SYNC
EW-571
STAIRS
Y
R-Y
B-Y
SYNC
EW-573
GENLOCK
Video Input Board
TF7/Extension board:AFM-6P(Y SYSTEM ADJUSTMENT)
TP8/Extension board:VDA-11P(C SYSTEM ADJUSTMENT)

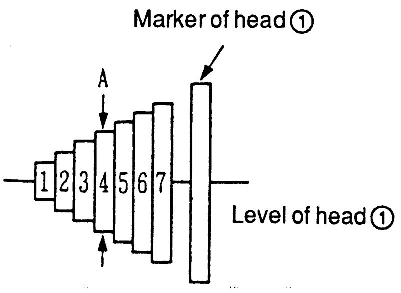
- Preparation

- Remove short-housing CNJ2 on the AFM-6P board and connect the RF OUT connector of the REC Current Adjustment Tool between TP4 on the AFM-6P board and E2 on the AFM-6P board.
- Insert the BCT-20G and put the unit into the REC PAUSE mode.
- Adjustment To II:

  AUTO/MANU → AUTO
  NTSC/PAL → NTSC
  Y/C → Y
  METAL/OXIDE→OXIDE

- Adjustment procedures

- Test point : TP32/Extension board: AFM-6P
- Adj. point : RF LEVEL VR/REC CURRENT ADJUSTMENT TOOL
- Spec. : A = 800 ± 10mV (Fourth level)


Marker of head ①
A
1
2
3
4
5
6
7
Level of head ①

Step 2.

- Setting

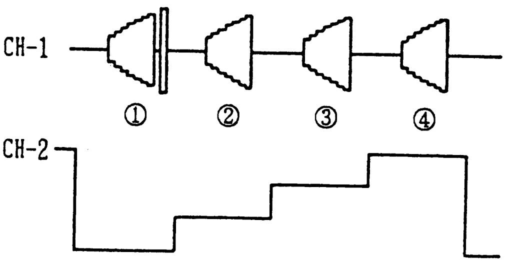
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

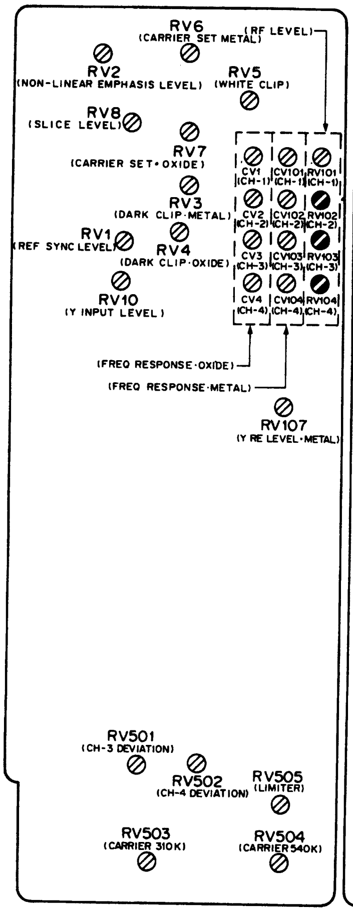
- Preparation

- Adjust so that the specified level is the same as in Step 1.
- Put the unit into the REC mode and record the signal on the tape.

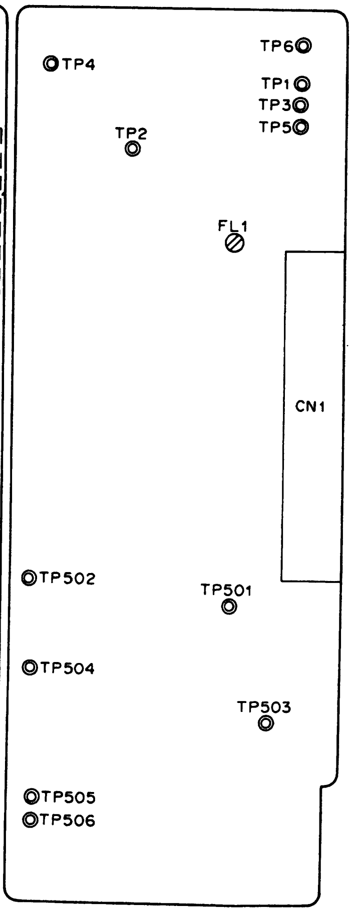
- Adjustment procedures

- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point : HEAD② : ● RV102/AFM-6P
  HEAD③ : ● RV103/AFM-6P
  HEAD④ : ● RV104/AFM-6P
- Spec. :


CH-1
①
②
③
④
CH-2


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET•OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

Step 3

- Setting

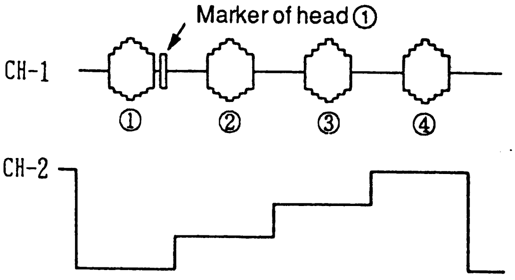
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

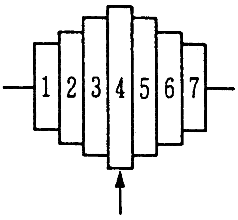
- Preparation

- Play back the recorded portion in step 2.
- Memorize the maximum level for every four heads (① through ④).

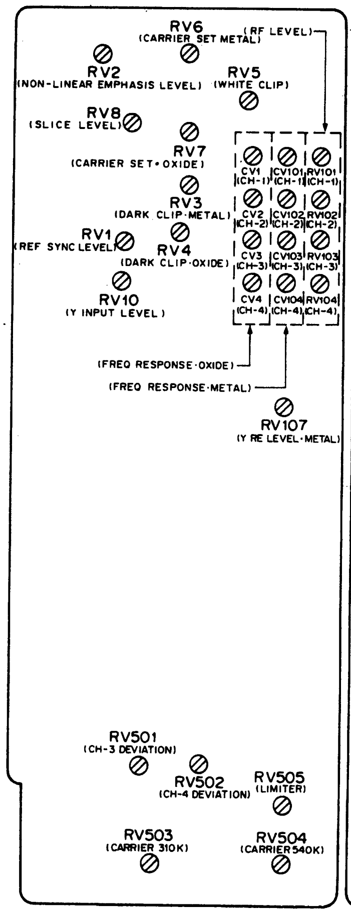
- Adjustment procedures

- Test point : CH-1 : TP33/Extension board : VP-24
  CH-2 : TP25/Extension board : VP-24
- Spec: :

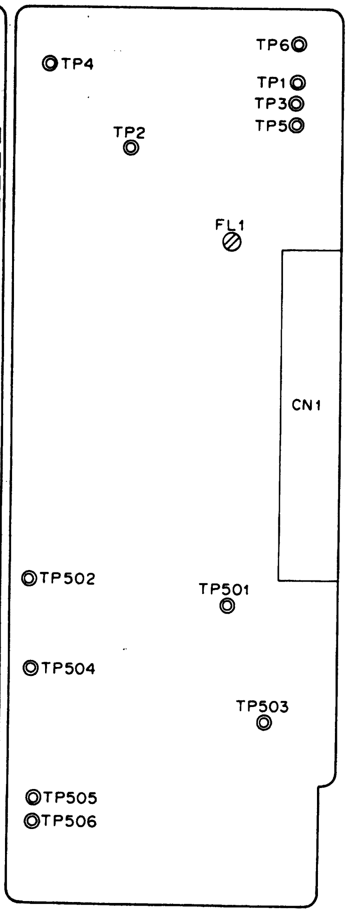

Marker of head ①
CH-1
①
②
③
④
CH-2



Check the maximum PB RF level.
* The illustrated fourth level is maximum.


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET·OXIDE)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
RV3
(DARK CLIP·METAL)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
RV10
(Y INPUT LEVEL)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP6
TP4
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

- Note

- Remove a tool between TP4 and E2 and install short-housing CNJ2.

Step 4.

- Setting

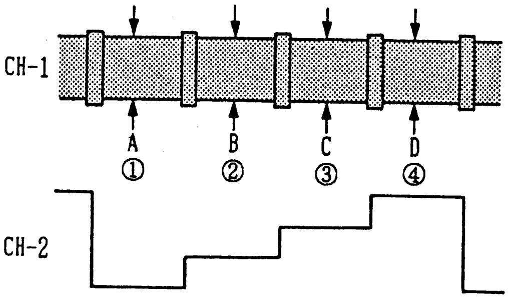
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

- Input signal: 50% flat field
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

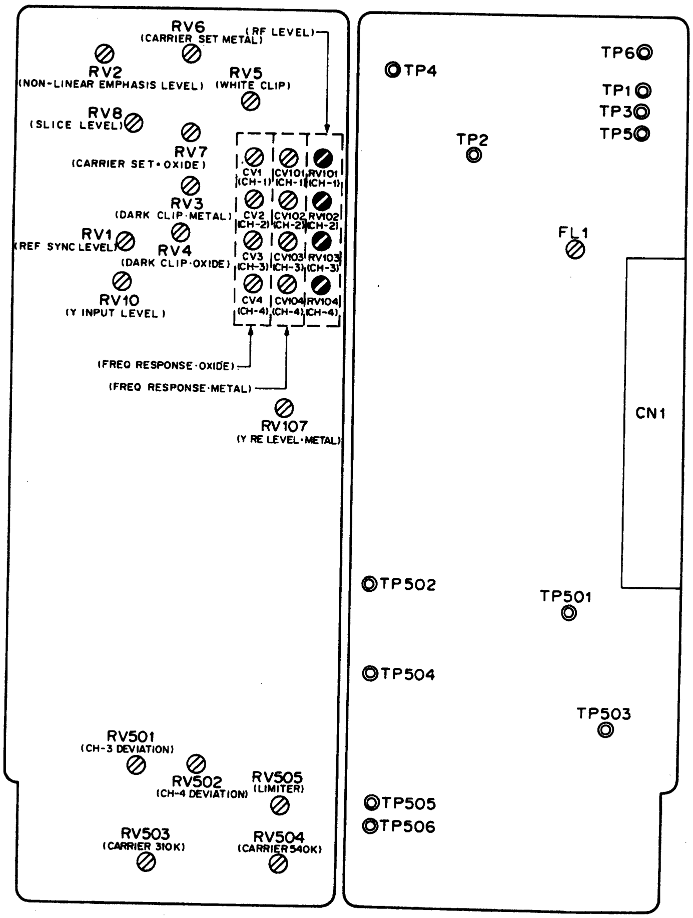
- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point : HEAD① : ● RV101/AFM-6P
  HEAD② : ● RV102/AFM-6P
  HEAD③ : ● RV103/AFM-6P
  HEAD④ : ● RV104/AFM-6P
- Spec. : Adjust the voltage so that A, B, C, and D correspond to the maximum levels memorized in Step 3.


CH-1
A
①
B
②
C
③
D
④
CH-2

[Correspondence Table]

1	2	3	4	5	6	7
630	690	750	800	865	930	980

(mVp-p)


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-26. Y Frequency Response Check (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

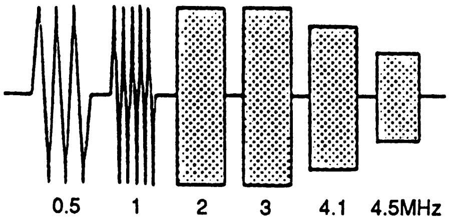
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) - (CR5-2APS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

1 MHz	100 %
2 MHz	98 %
3 MHz	90 %
4.1 MHz	73 %

Chart 1

- Adjustment procedures

CAV Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.5MHz	100% (REFERENCE)
1MHz	(100−Calibration value)±5%
2MHz	(98−Calibration value)$^{+5}_{-7.5}$%
3MHz	(90−Calibration value)$^{+5}_{-10}$%
4.1MHz	(73−Calibration value)$^{+5}_{-18}$%

Measure the levels at the center of moire.

The level difference between the CH-1 and the CH-2 should be in the 5% or the less.

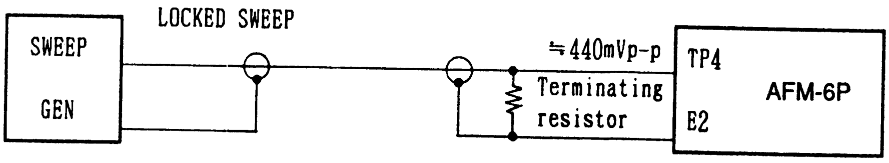
When the specification is not satisfied, re-adjust the Y recording current frequency responce adjustment (Oxide) within the specification. After the adjustment, perform the Y recording current adjustment (Oxide).

8-5-27. Y REC Current Frequency Response Adjustment (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Connection


SWEEP
GEN
LOCKED SWEEP
≒440mVp-p
Terminating
resistor
TP4
E2
AFM-6P

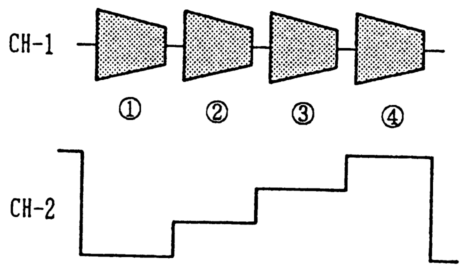
- Preparation

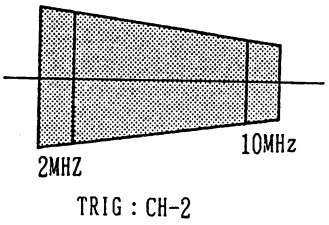
- Remove short-housing CNJ2 on the AFM-6P board, connect the Sweep Signal Generator between TP4 on the AFM-6P board and E2 on the AFM-6 board, and supply a locked sweep signal.
- Insert the BCT-20M and put the unit into the REC mode.
- After adjustment is completed, install short-housing CNJ2.

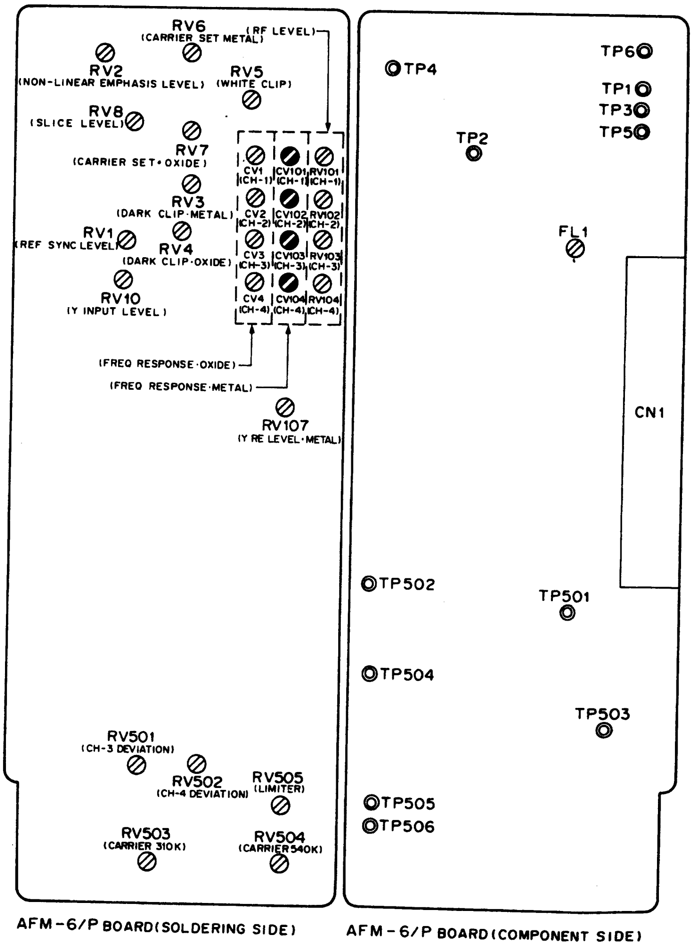
- Adjustment procedures

- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point : ① ⊘ CV101/AFM-6P
  ② ⊘ CV102/AFM-6P
  ③ ⊘ CV103/AFM-6P
  ④ ⊘ CV104/AFM-6P
- Spec. :

frequency	level
2 MHz	100% reference
10 MHz	95^{+5}_{-10} %


CH-1
①
②
③
④
CH-2


2MHZ
10MHz
TRIG : CH-2


RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET·OXIDE)
RV3 (DARK CLIP·METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP·OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107 (Y RE LEVEL·METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506
AFM-6/P BOARD(SOLDERING SIDE)
AFM-6/P BOARD(COMPONENT SIDE)

8-5-28. Y REC Current Adjustment (Metal)

- Setting

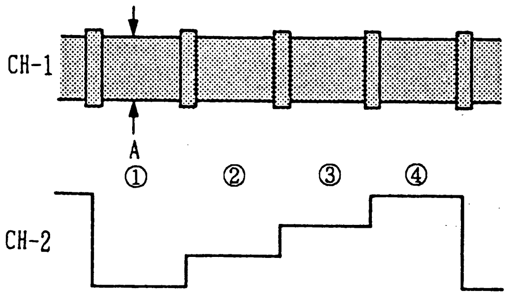
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

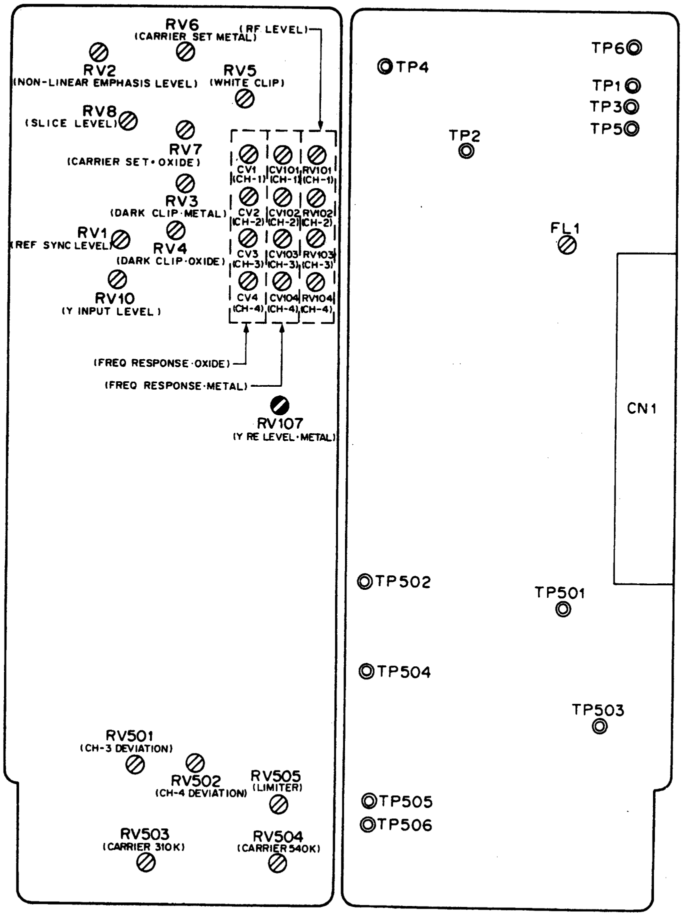
- Input signal: 50% flat field
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point : ⊘ RV107/AFM-6P
- Spec. : Adjust so that A is two times as high as the level of head ① which is set in Step 4 of Sec. 8-5-25. Y REC Current Adjustment (Oxide).


CH-1
A
①
②
③
④
CH-2

The each level of the head① through④ should be less than 1.6V.


RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET·OXIDE)
RV3 (DARK CLIP·METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP·OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107 (Y RE LEVEL·METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-29. Y Frequency Response Check (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

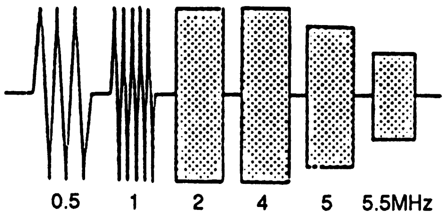
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) - (CR5-1BPS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

1 MHz	100 %
2 MHz	100 %
4 MHz	100 %
5 MHz	100 %
5.5 MHz	80 %

Chart 1

- Adjustment procedures

CAV Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.5MHz	100% (REFERENCE)
1MHz	(100−Calibration value) ±5%
2MHz	(100−Calibration value) ±5%
4MHz	(100−Calibration value)$^{+2.5}_{-7.5}$%
5MHz	(100−Calibration value)$^{+5}_{-7.5}$%
5.5MHz	(85−Calibration value) $^{+10}_{-15}$%

Measure the levels at the center of moire.

The level difference between the CH-1 and the CH-2 should be in the 5% or the less.

When the specification is not satisfied, re-adjust the Y recording current frequency responce adjustment (Metal) within the specification. After the adjustment, perform the Y recording current adjustment (Metal).

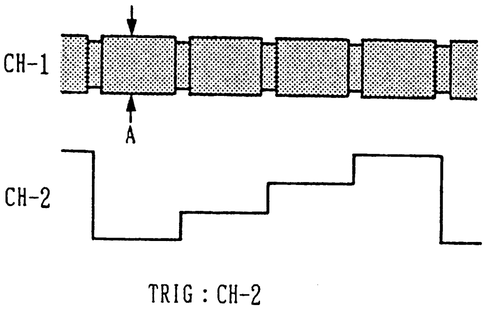
8-5-30. C REC Current Tentative Adjustment (Oxide)

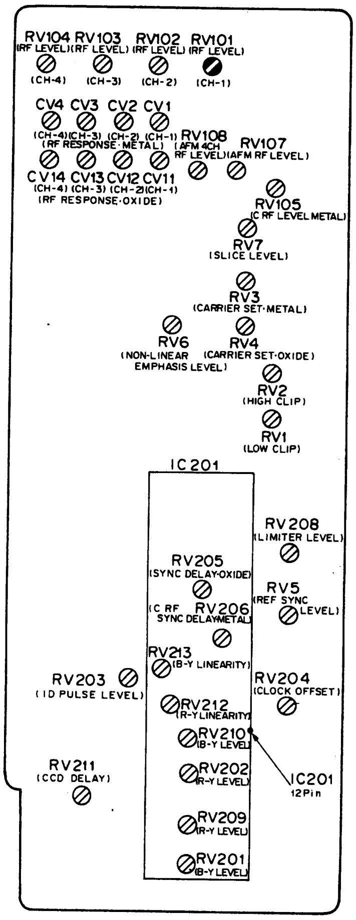
- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

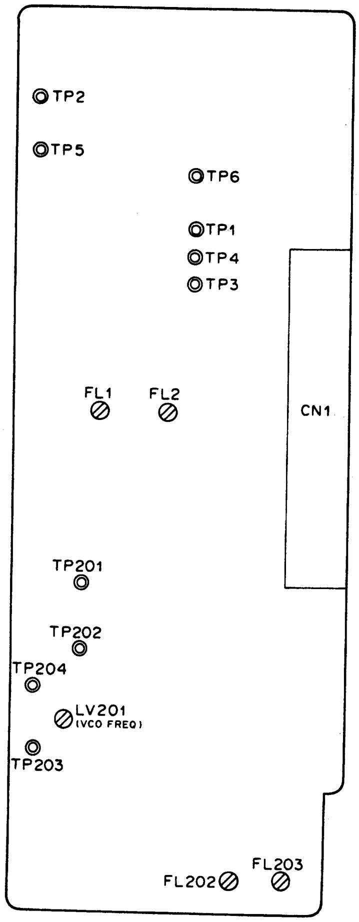
- Preparation
  - Input signal: 0% flat field
  - Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures
  - Test point : CH-1 : TP46/Extension board
    CH-2 : TP8/Extension board
  - Adj. point : ● RV101 (CH-1 RF LEVEL) /VDA-11P
  - Spec. : A = 400±10mV


CH-1
A
CH-2
TRIG : CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4)(CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2)(CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

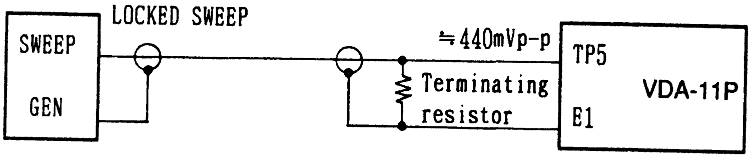
VDA-11/P BOARD(COMPONENT SIDE)

8-5-31. C REC Current Frequency Response Adjustment (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA–11P board

- Connection


SWEEP
GEN
LOCKED SWEEP
≒440mVp-p
Terminating
resistor
TP5
E1
VDA-11P

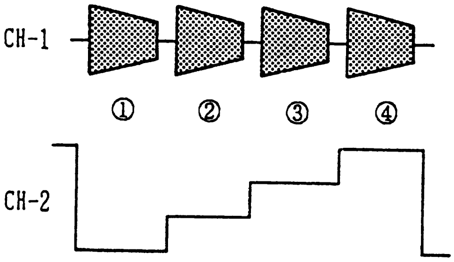
- Preparation

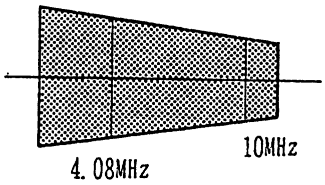
- Remove short-housing CNJ2 on the VDA-11P board, connect the Sweep Signal Generator between TP5 on the VDA-11P board and E1 on the VDA-11P board, and supply a locked sweep signal.
- Insert the BCT-20G and put the unit into the REC PAUSE mode.

- Adjustment procedures

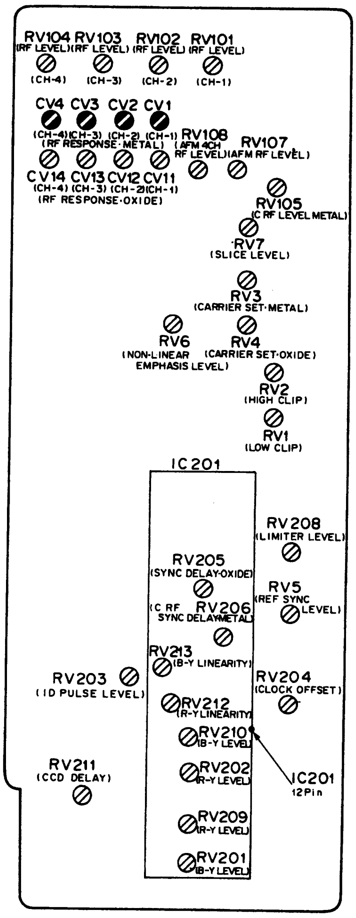
- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : CH-1 : ⊘ CV1/VDA-11P
  CH-2 : ⊘ CV2/VDA-11P
  CH-3 : ⊘ CV3/VDA-11P
  CH-4 : ⊘ CV4/VDA-11P
- Spec. :

frequency	level
3.93 MHz	100% reference
10 MHz	60 ±10%

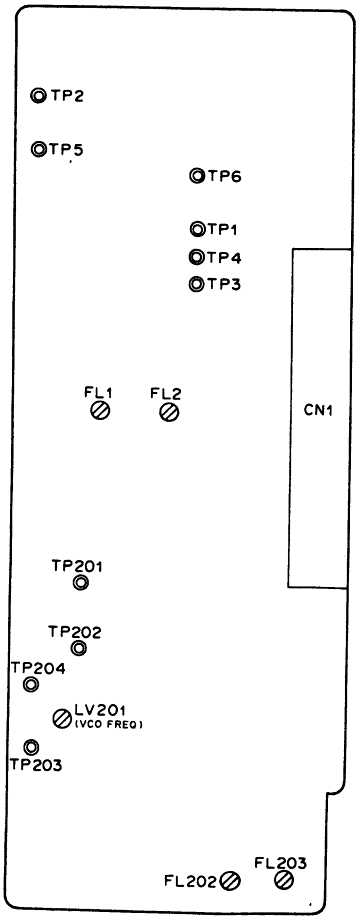

CH-1
①
②
③
④
CH-2


4.08MHz
10MHz

TRIG : TP8/Extension board


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA–11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA–11/P BOARD(COMPONENT SIDE)

- Note

- After adjustment is completed, install short-housing CNJ2.

8-5-32. C REC Current Adjustment (Oxide)

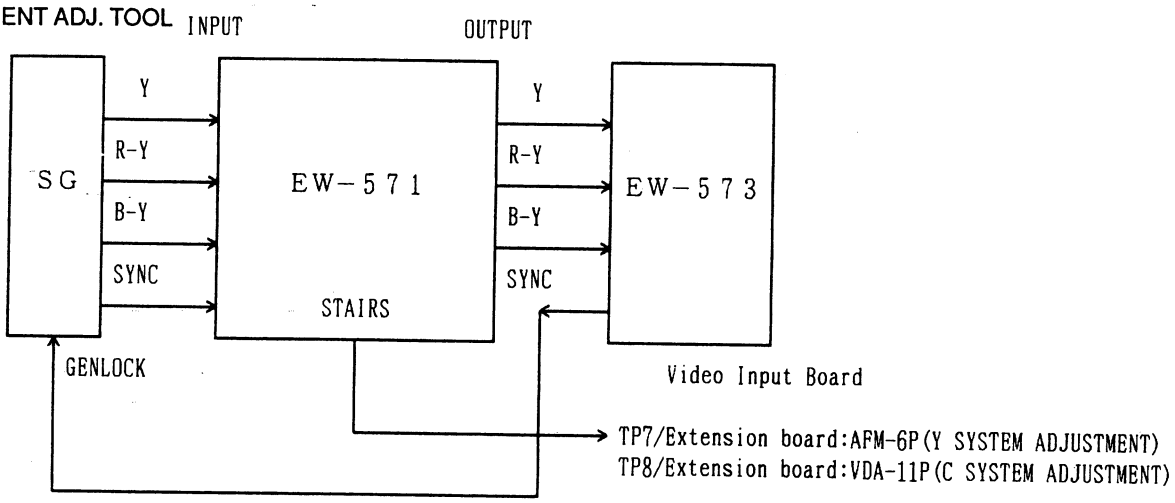
Step 1.

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Connection

REC CURRENT ADJ. TOOL

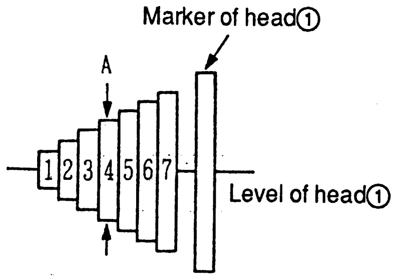

INPUT
OUTPUT
SG
Y
R-Y
B-Y
SYNC
EW-571
STAIRS
Y
R-Y
B-Y
SYNC
EW-573
Video Input Board
GENLOCK
TP7/Extension board:AFM-6P (Y SYSTEM ADJUSTMENT)
TP8/Extension board:VDA-11P (C SYSTEM ADJUSTMENT)

- Preparation

- Remove short-housing CNJ2 on the VDA-11P board and connect the RF OUT connector of the REC Current Adjustment Tool between TP5 on the VDA-11P board and E1 on the VDA-11P board.
- Insert the BCT-20K and put the unit into the REC PAUSE mode.
- Adjustment:
  AUTO/MANU→AUTO
  NTSC/PAL→NTSC
  Y/C→C
  METAL/OXIDE→OXIDE

- Adjustment procedures

- Test point : TP46/Extension board
- Adj. point : RF LEVEL VR/REC Current Adjustment Tool
- Spec. : A = 400±10mV (Fourth level)


Marker of head①
A
1
2
3
4
5
6
7
Level of head①

Step 2.

- Setting

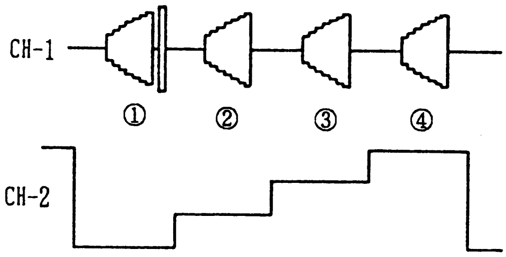
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

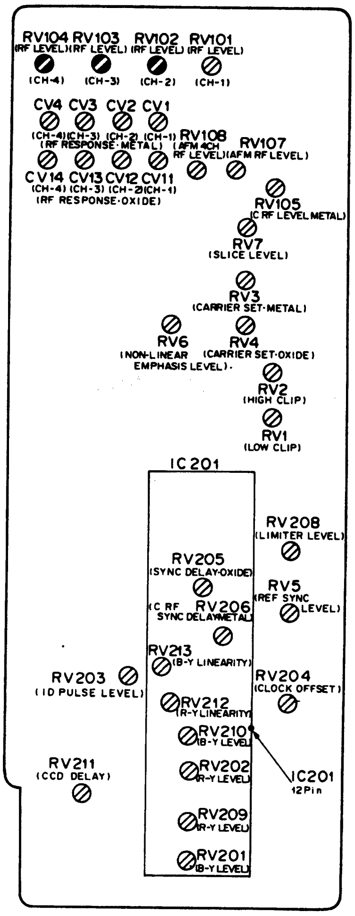
- Preparation

- Adjust so that the specified level is the same as in Step 1.
- Put the unit into the REC mode and record the signal in the tape.

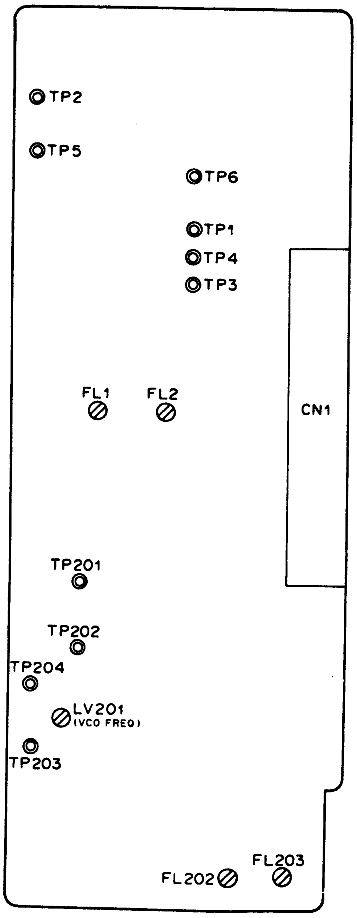
- Adjustment procedures

- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point :HEAD② : ⊘ RV102/VDA-11P
  HEAD③ : ⊘ RV103/VDA-11P
  HEAD④ : ⊘ RV104/VDA-11P


CH-1
①
②
③
④
CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

Step 3.

- Setting

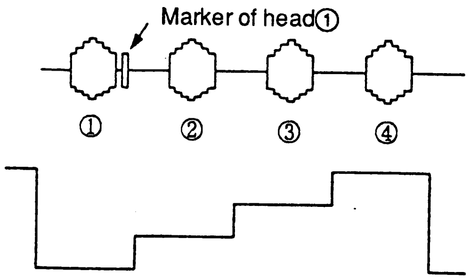
Equipment: Dualtrace Oscilloscope	Board: VP–24P board

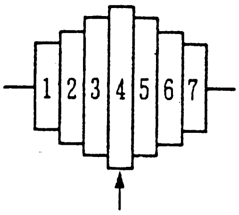
- Preparation

• Play back the recorded portion in Step 2. • Memorize the maximum level for every four heads (① through ④)

- Adjustment procedures

- Test point : CH-1 : TP31/Extension board: VP-24P
  CH-2 : TP25/Extension board: VP-24P
- Spec. :





Check the maximum PB RF level.
* The illustrated fourth level is maximum.

- Note

• Remove the tool between TP5 and E1 and install short-housing CNJ2.

Step 4.

- Setting

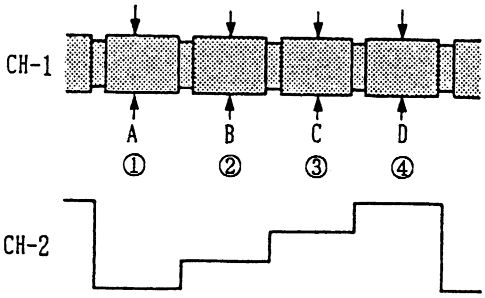
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

- Input signal: 0% flat field
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

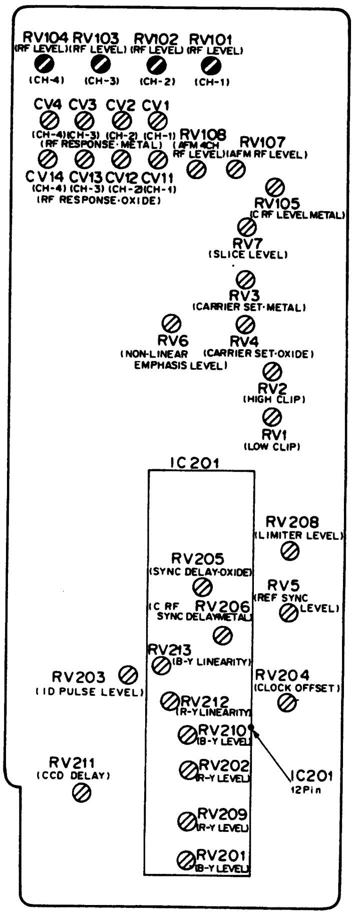
- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : HEAD① : ⊘ RV101/VDA-11P
  HEAD② : ⊘ RV102/VDA-11P
  HEAD③ : ⊘ RV103/VDA-11P
  HEAD④ : ⊘ RV104/VDA-11P
- Spec. : Adjust the voltage so that A,B, C, and D correspond to the maximum levels memorized in Step 3.


CH-1
A
B
C
D
①
②
③
④
CH-2

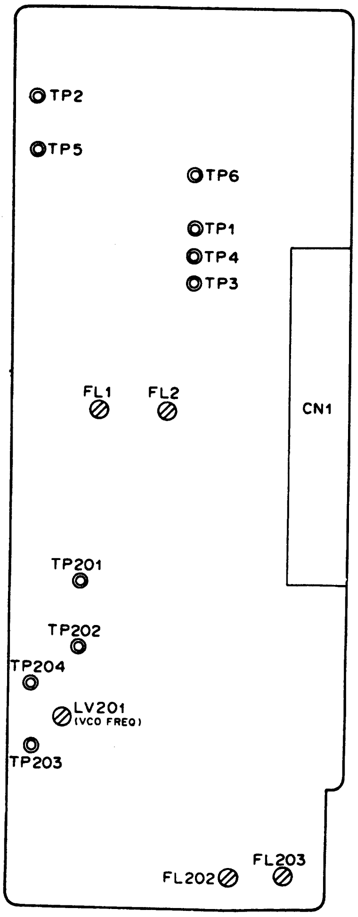
[Correspondence Table]

1	2	3	4	5	6	7
310	340	370	400	430	475	500

(mVp-p)


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-33. C Frequency Response Check (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

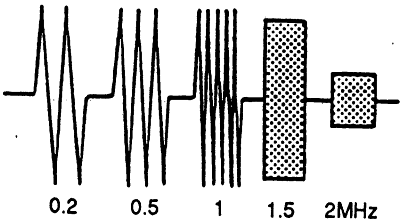
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) – (CR5-2BPS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

0.5 MHz	100 %
1 MHz	100 %
1.5 MHz	85 %

Chart 1

- Adjustment procedures

R-Y OUT/BVW-75P (or equivalent)
B-Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.2MHz	100% (REFERENCE)
0.5MHz	(100–Calibration value) ±5%
1MHz	(100–Calibration value) ±5%
1.5MHz	(85–Calibration value)$^{+5}_{-15}$ %

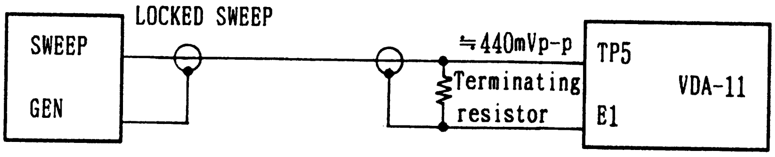
- The level difference between the CH-1 and the CH-2 should be in the 5% or the less.
- When the specification is not satisfied, re-adjust the C recording current frequency response adjustment (Oxide) with the specification. After the adjustment, perform the C recording current adjustment (Oxide).

8-5-34. C REC Current Frequency Response Adjustment (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Connection

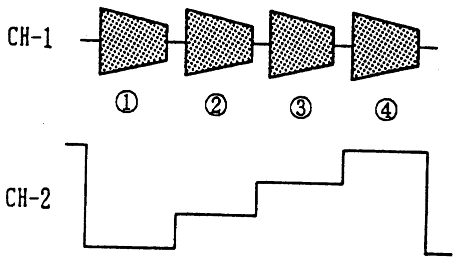

LOCKED SWEEP
SWEEP
GEN
≒440mVp-p
Terminating
resistor
TP5
E1
VDA-11

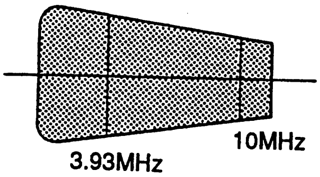
- Preparation

- Remove short-housing CNJ2 on the VDA-11P board, connect the Sweep Signal Generator between TP5 on the VDA-11P board and E1 on the VDA-11P board, and supply a locked sweep signal.
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

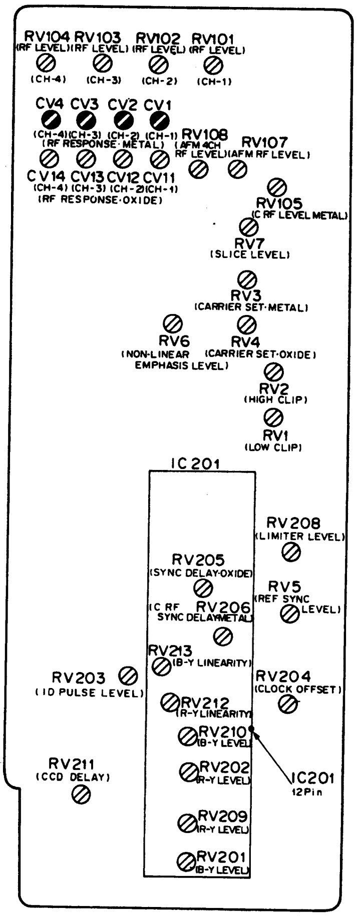
- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : ① : ● CV1/VDA-11P
  ② : ● CV2/VDA-11P
  ③ : ● CV3/VDA-11P
  ④ : ● CV4/VDA-11P
- Spec. :


CH-1
①
②
③
④
CH-2

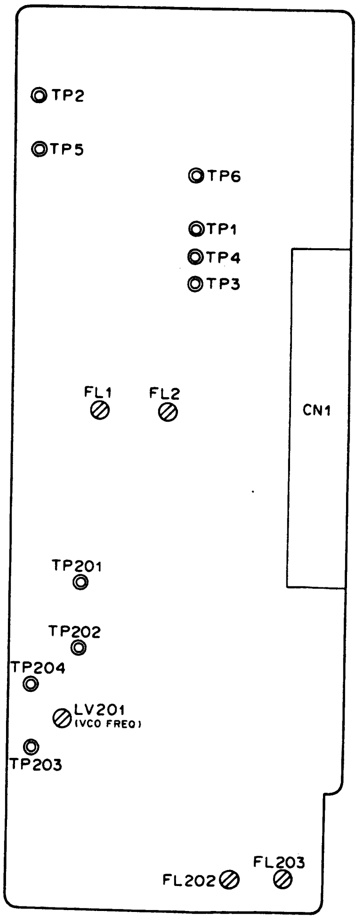

3.93MHz
10MHz

frequency	level
3.93 MHz	100% reference
10 MHz	65 ±10%

TRIG : CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC 201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

- Note

- After adjustment is completed, install short-housing CNJ2.

8-5-35. C REC Current Adjustment (Metal)

- Setting

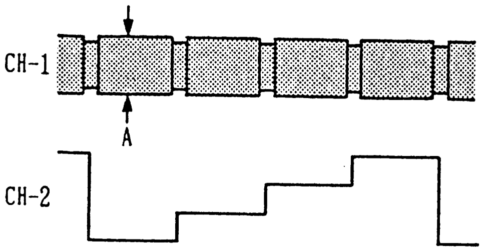
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

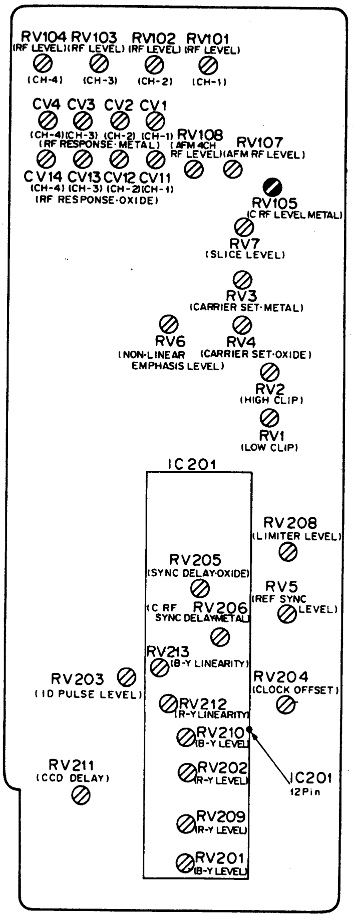
- Input signal: 0% flat field
- Connect a tantalum capacitor (1 to 10μF/16V) between TP35 and TP1, TP36 and TP2 on the Extension board. (TP1 and TP2 negative).
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

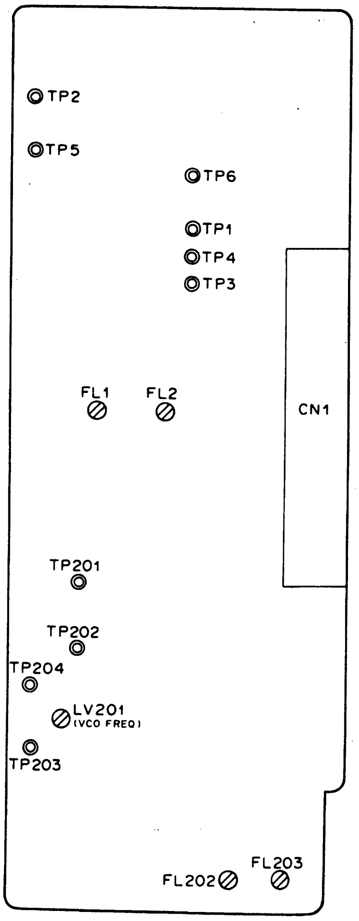
- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : ⊘ RV105/VDA-11P
- Spec. : Adjust so that A is one point eight times as high as the level of head ① which is set in Step 4 of Sec. 8-5-30 C REC Current Adjustment (Oxide).



Note: The each level of the head ① through ④ should be less than 1.0V.


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1 (CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11 (CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD (SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD (COMPONENT SIDE)

8-5-36. C Frequency Response Check (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

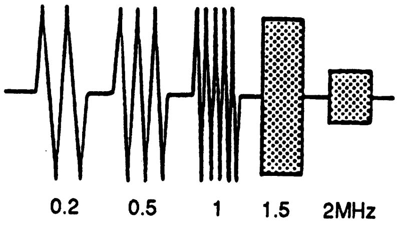
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) - (CR5-1BPS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

1 MHz	100 %
2 MHz	100 %
4 MHz	100 %

Chart 1

- Adjustment procedures

R-Y OUT/BVW-75P (or equivalent)
B-Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.2MHz	100% (REFERENCE)
0.5MHz	(100−Calibration value) ±5%
1MHz	(100−Calibration value) ±5%
1.5MHz	(85−Calibration value)$^{+5}_{-15}$ %

- The level difference between the CH-1 and the CH-2 should be in the 5% or the less.
- When the specification is not satisfied, re-adjust the C recording current frequency response adjustment (Metal) within the specification. after the adjustment, perform the C recording current adjustment (Metal).

8-5-37. C REF Sync Position Tentative Adjustment (Metal)

- Setting

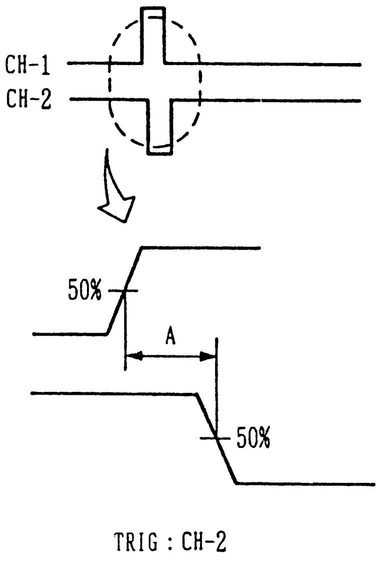
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

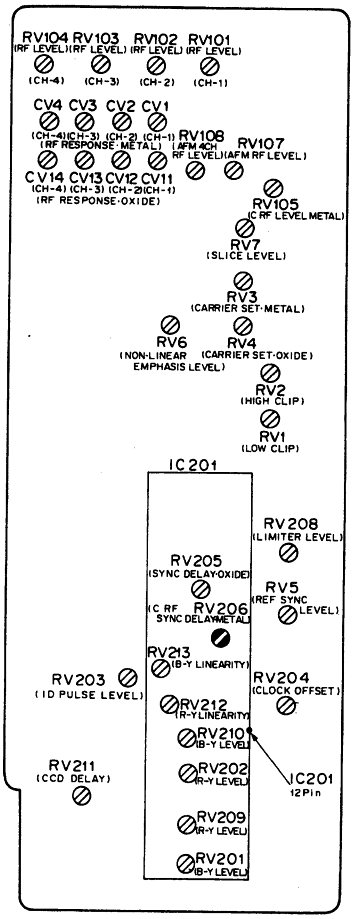
- Preparation

> - Input signal: MOD pulse and bar
> - Insert the BCT-20M and put the unit into the REC mode.

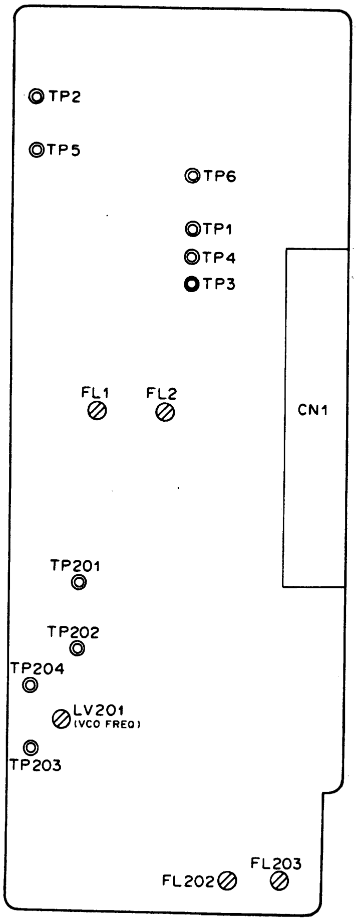
- Adjustment procedures

- Test point : CH-1 : TP17/Extension board
  CH-2 : TP3/VDA-11P
- Adj. point : ⊘ RV206 (C REF SYNC DELAY METAL)/VDA-11P
- Spec. : A = 195±5nsec


CH-1
CH-2
50%
A
50%
TRIG : CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY·METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-38. C REF Sync Position Tentative Adjustment (Oxide)

- Setting

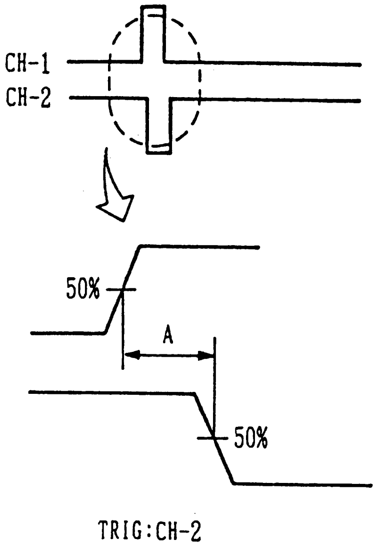
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

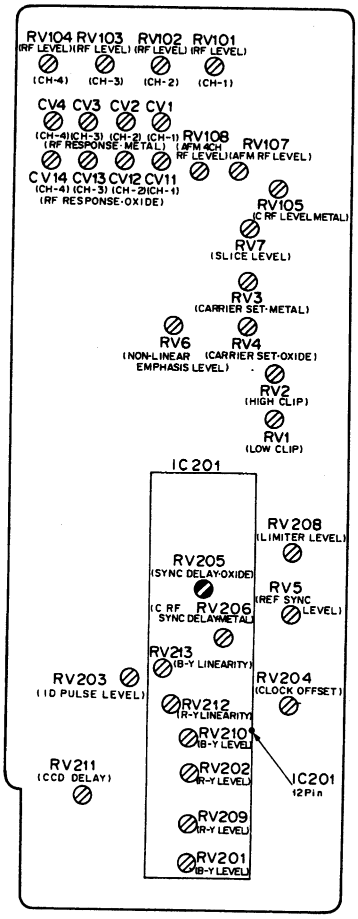
- Preparation

- Input signal: MOD pulse and bar
- Insert the BCT-20G and put the unit into the REC mode.

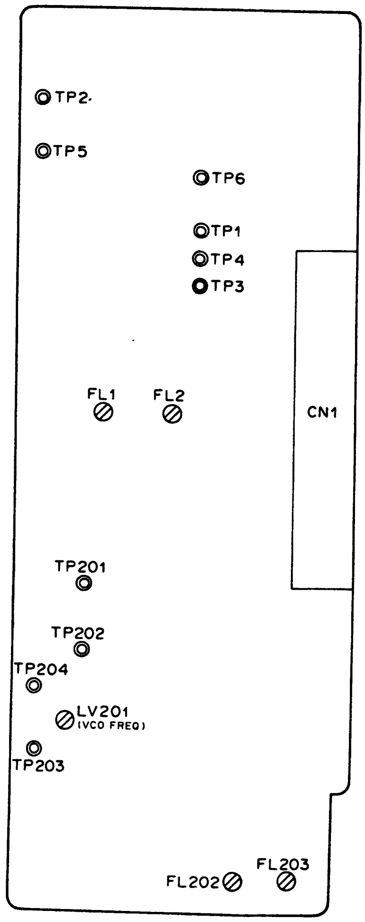
- Adjustment procedures

- Test point : CH-1 : TP17/Extension board
  CH-2 : TP3/VDA-11P
- Adj. point : ⊘ RV205/VDA-11P (C REF SYNC DELAY OXIDE)
- Spec. : A = 185±5nsec


CH-1
CH-2
50%
A
50%
TRIG:CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-39. Composite Y/C Delay Adjustment (Metal)

Step 1.

- Note

- A standard VTR (BVW-75 or the equivalent) which is adjusted to the specified value is used in this adjustment.

- Setting

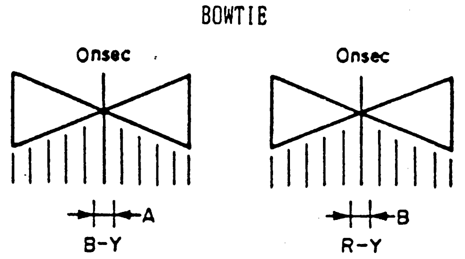
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

- Input signal: BOWTIE (TSG-300)
- Insert the BCT-20M and put the unit into the REC mode.
- Play back the recorded tape using a standard VTR player.
- Set the Y/C DELAY control of a standard VTR player to PRESET.

- Adjustment procedures

- Test point : CAV Y, CAV R–Y, CAV B–Y } OUT/Standard VTR (terminated by 75 ohms)
- Spec. : A , B = ±10nsec



1. Check that the cross point of waveform is between A and B.
2. If the specification is not satisfied, check that the chroma signal is advanced or delayed.

Step 2.

• Setting

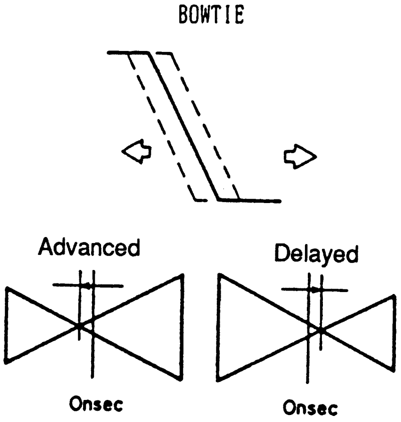
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

• Preparation

• Insert the BCT-20M and put the unit into the REC mode.

• Adjustment procedures

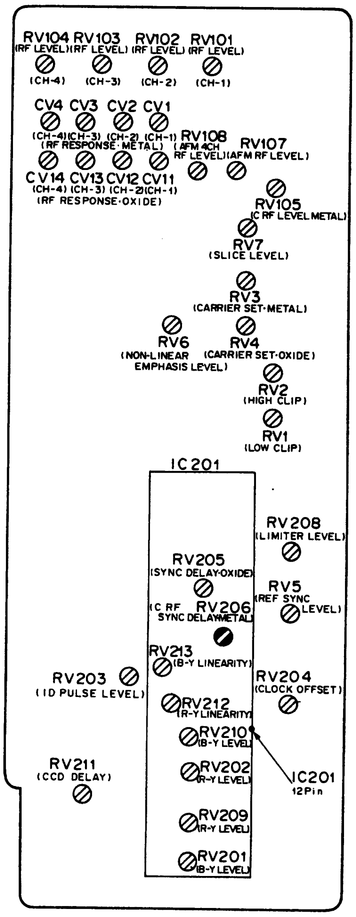
• Test point : TP3/VDA-11P
• Adj. point : ⊘ RV206 /VDA-11P (C REF SYNC DELAY METAL)
• Spec. :



BOWTIE
Advanced
Delayed
Onsec
Onsec

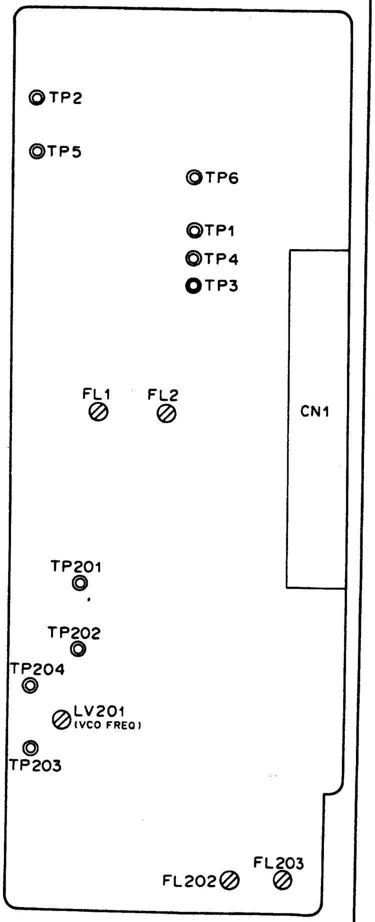
TRIG:TP17/Extension board

1. When the chroma signal is delayed, correct the REF Sync signal in the right direction.
2. When the chroma signal is advanced, correct the REF Sync signal in the left direction.
3. Adjust Steps 1 and 2 repeatedly until the specification is satisfied.



RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)



TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-40. Composite Y/C Delay Adjustment (Oxide)

Step 1.

- Setting

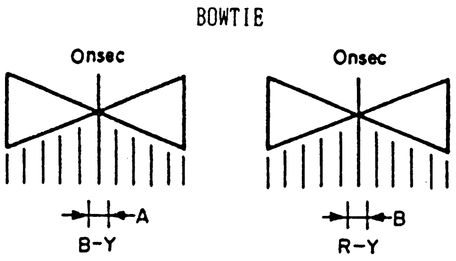
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

- Input signal: MOD pulse and bar
- Insert the BCT-20G and put the unit into the REC mode.
- Play back the recorded tape using a standard VTR.
- Set the Y/C DELAY control of a standard VTR to PRESET.

- Adjustment procedures

- Test point : CAV Y, CAV R–Y, CAV B–Y } OUT/Standard VTR (terminated by 75 ohms)
- Spec. : A , B = ±10nsec



1. Check that the cross point of waveform is between A and B.
2. If the specification is not satisfied, check that the chroma signal is advanced or delayed.

- Note

- A standard VTR (BVW-75P or the equivalent) which is adjusted to the specified value is used in this adjustment.

Step 2

- Setting

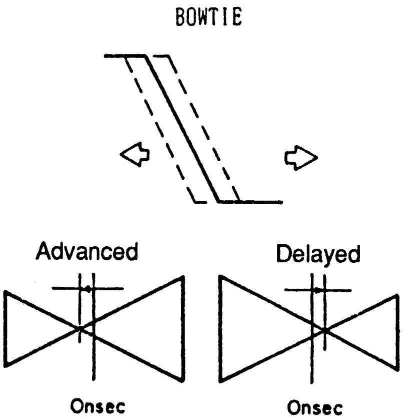
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

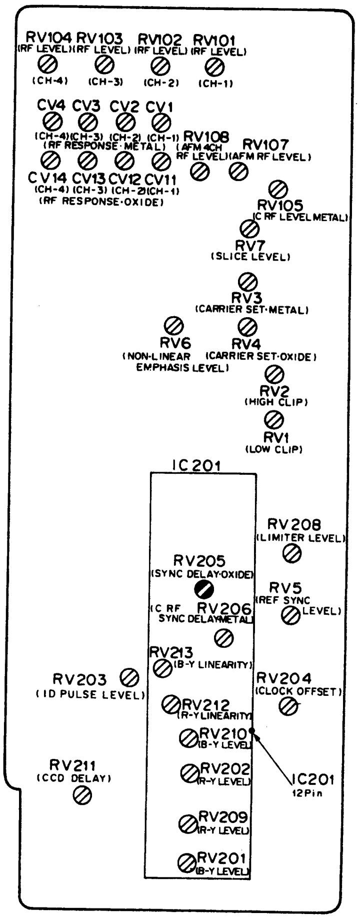
- Test point : TP3/VDA-11P
- Adj. point : ⊘ RV205 /VDA-11P (C REF SYNC DELAY OXIDE)
- Spec. :



BOWTIE
Advanced
Delayed
Onsec
Onsec

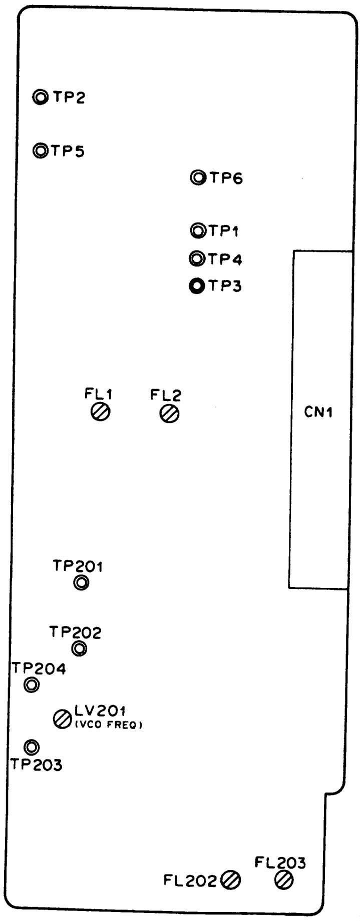
TRIG:TP17/Extension board

1. When the chroma signal is delayed, correct the REF Sync signal in the right direction.
2. When the chroma signal is advanced, correct the REF Sync signal in the left direction.
3. Adjust Steps 1 and 2 repeatedly until the specification is satisfied.



RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
(C RF SYNC DELAY METAL) RV206
RV213 (B-Y LINEARITY)
RV203 (ID PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)



TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-41. AFM-RF Balance Adjustment

- Setting

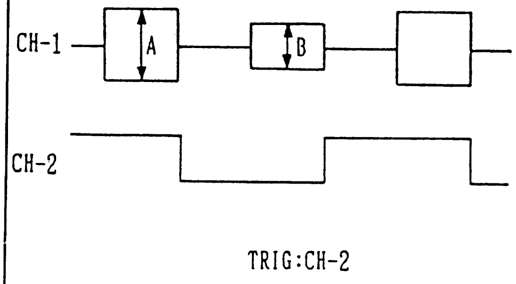
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

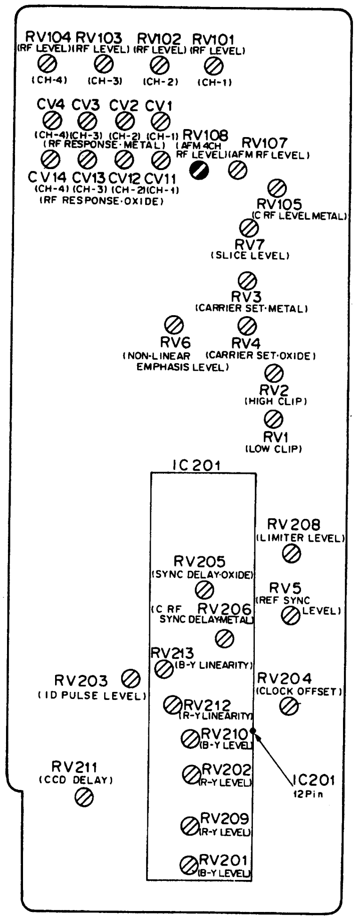
- Preparation

- AUDIO IN CH-1/CH-2: No signal
- Insert the BCT-20M and put the unit into the REC mode.
- Play back the recorded tape using a standard VTR player (BVW-75 or the equivalent).
- REC mode→adjustment
- Play mode→check
- Player CAP Lock Mode "4 FIELD"

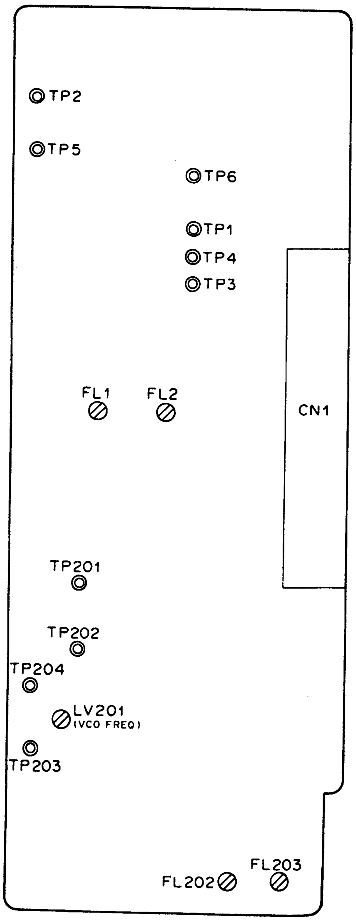
- Adjustment procedures

- Test point : CH-1 : IC602-14/VO-18 board:
  BVW-75 series
  CH-2 : TP31/EN-48 board:
  BVW-75 series
- Adj. point : ⊘ RV108 /VDA-11P
- Spec. : A = B ± 15%


CH-1
A
B
CH-2
TRIG:CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·METAL)
RV108 (AFM 4CH RF LEVEL)
RV107 (AFM RF LEVEL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1) (RF RESPONSE·OXIDE)
RV105 (C RF LEVEL METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET·METAL)
RV6 (NON-LINEAR EMPHASIS LEVEL)
RV4 (CARRIER SET·OXIDE)
RV2 (HIGH CLIP)
RV1 (LOW CLIP)
IC201
RV208 (LIMITER LEVEL)
RV205 (SYNC DELAY·OXIDE)
RV5 (REF SYNC LEVEL)
RV206 (C RF SYNC DELAY·METAL)
RV213 (B-Y LINEARITY)
RV203 (I D PULSE LEVEL)
RV204 (CLOCK OFFSET)
RV212 (R-Y LINEARITY)
RV210 (B-Y LEVEL)
RV211 (CCD DELAY)
RV202 (R-Y LEVEL)
IC201 12Pin
RV209 (R-Y LEVEL)
RV201 (B-Y LEVEL)

VDA-11/P BOARD(SOLDERING SIDE)


TP2
TP5
TP6
TP1
TP4
TP3
FL1
FL2
CN1
TP201
TP202
TP204
LV201 (VCO FREQ)
TP203
FL202
FL203

VDA-11/P BOARD(COMPONENT SIDE)

8-5-42. Y PB RF Level Adjustment

- Setting

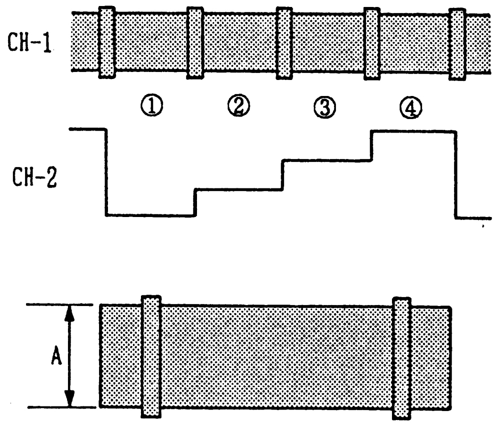
Equipment: Dualtrace Oscilloscope	Board: VP-24P board

- Preparation

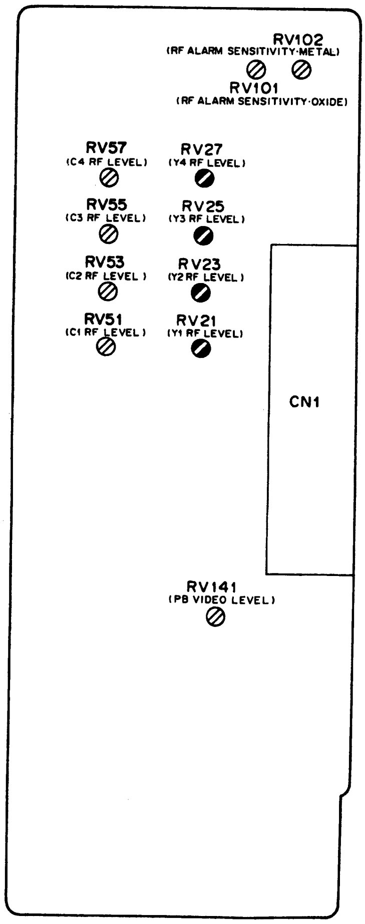
- Play back the flat signal on the alignment tape CR5-2APS.
- Make a tracking so that the RF level is maximum.

- Adjustment procedures

- Test point : CH-1 : TP33/Extension board
  (Terminated by 75 ohms.)
  CH-2 : TP25/Extension board
- Adj. point : ① : ⊘ RV21/VP-24P
  ② : ⊘ RV23/VP-24P
  ③ : ⊘ RV25/VP-24P
  ④ : ⊘ RV27/VP-24P
- Spec. : A = 220 ± 20mV


CH-1
①
②
③
④
CH-2
A

TRIG:CH-2


RV102
(RF ALARM SENSITIVITY-METAL)
RV101
(RF ALARM SENSITIVITY-OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)

8-5-43. C PB RF Level Adjustment

- Setting

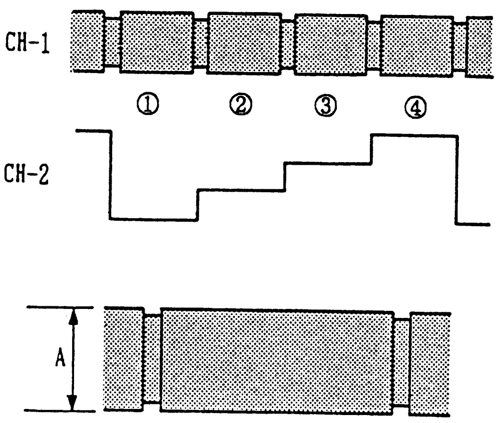
Equipment: Dualtrace Oscilloscope	Board: VP-24P board

- Preparation

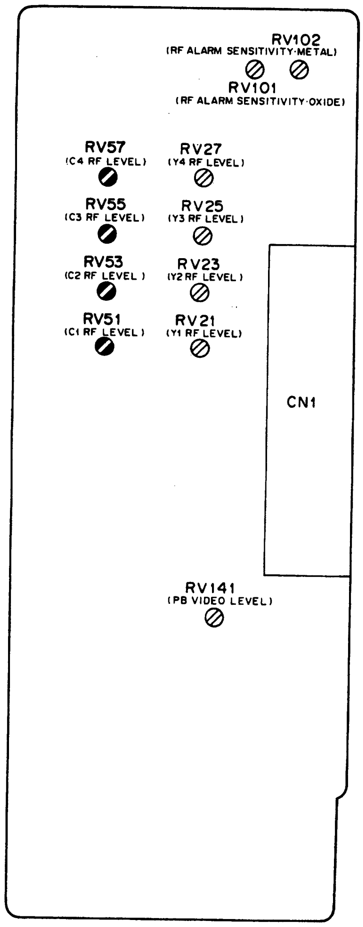
- Play back the flat field signal on the alignment tape CR 5-2APS.
- Make a tracking so that the RF level is maximum.

- Adjustment procedures

- Test point : CH-1 : TP31/Extension board
  (Terminated by 75 ohms.)
  CH-2 : TP25/Extension board
- Adj. point : ① : ● RV51/VP-24P
  ② : ● RV53/VP-24P
  ③ : ● RV55/VP-24P
  ④ : ● RV57/VP-24P
- Spec. : A = 220 ± 20mV


CH-1
①
②
③
④
CH-2
A

TRIG : CH-2


RV102
(RF ALARM SENSITIVITY·METAL)
RV101
(RF ALARM SENSITIVITY·OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)

8-5-44. VF PB Output Level Adjustment

- Setting

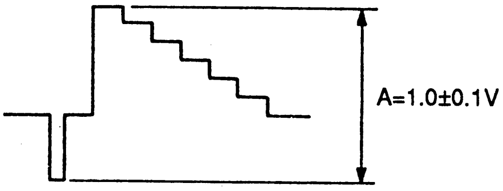
Equipment: Dualtrace Oscilloscope	Board: VP-24P board

- Adjustment procedures

- Test point : TP38/Extension board
- Adj. point : Step 1.
  ⊘ RV141 (PB VIDEO LEVEL) / VP-24P
- Spec. : A = 1.0 ± 0.1V
  B = 0.66 ± 0.1V

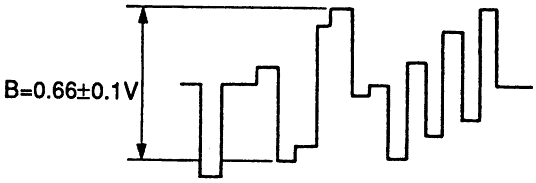
Step 1.

- Play back the color-bar signal on the alignment tape CR5-2APS.

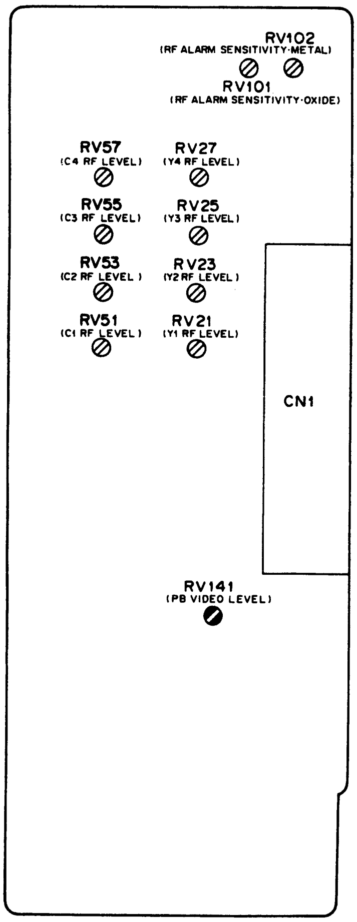


Step 2.

- Press the CTDM button.



Check that level A is 0.5±0.1V


RV102
(RF ALARM SENSITIVITY-METAL)
RV101
(RF ALARM SENSITIVITY-OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)

8-5-45. RF Alarm Sensitivity Adjustment

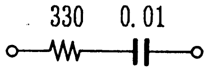
- Setting

Equipment: Dualtrace Oscilloscope	Board: VP-24P board

- Preparation

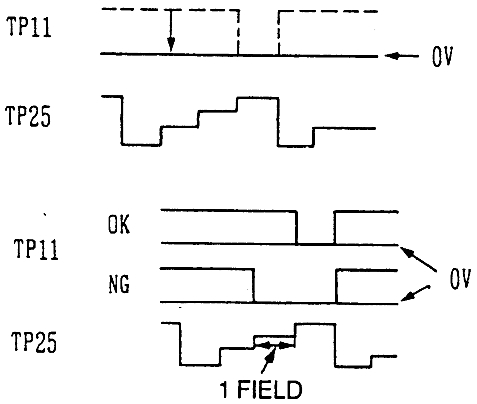
- Input signal: built-in color-bar
- Connect the clip cord with CR between TP26 and TP1 on the extension board.

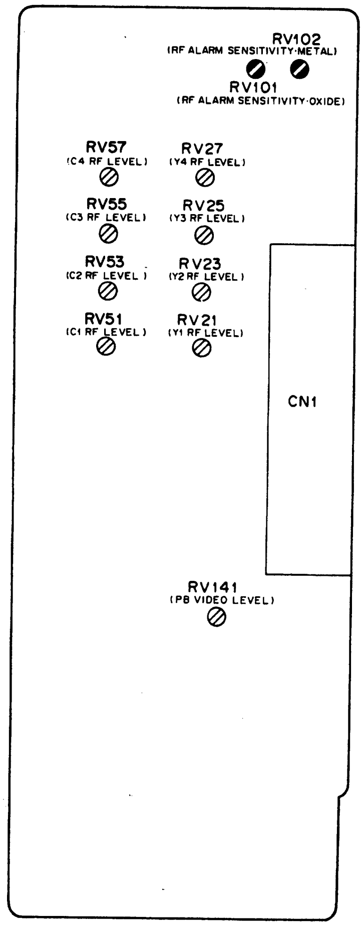
- chip cord with CR



- Adjustment procedures

- Test point : TP11/Extension board:VP-24P
  TP25/Extension board: VP-24P
- Adj. point : • OXIDE adjustment
  ⊘ RV101(RF ALARM SENSITIVITY):OXIDE /VP-24P
  - METAL adjustment
  ⊘ RV102 (RF ALARM SENSITIVITY: METAL /VP-24P
- Spec. : Adjust so that the pulse waveform of the TP11 becomes 0V level point.


TP11
0V
TP25
OK
TP11
NG
0V
TP25
1 FIELD


RV102
(RF ALARM SENSITIVITY·METAL)
RV101
(RF ALARM SENSITIVITY·OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)

1. Insert the BCT-20G and put the unit into the REC mode. (OXIDE adjustment)
2. After OXIDE adjustment, insert the BCT-20M and put the unit into the REC mode. (METAL mode)
3. After adjustment is completed, remove the clip cord.
4. Confirm that the waveform of the TP11 is not fall to 0V in over 2 fields continuously. When NG, readjust the 1~3.

The video system adjustment method has been changed along with the changes of the video board (VDA-11). Adjust according to the serial number on the right.

Serial No.	Adjustment page
41568 and higher	8-89~8-149

8-5. VIDEO SYSTEM ADJUSTMENT

【Equipment】

- Component signal Generator: TEKTRONIX TSG-300 or the equivalent
- Digital Voltmeter
- Dual trace Oscilloscope
- Frequency counter
- Sweep Generator
- Spectrum Analyzer
- DC power: AC-500 or the equivalent
- Waveform Vector Monitor: TEKTRONIX 1750 or the equivalent
- Standard VTR player: BVW-75P or the equivalent
- Rec Current Adj Tool (EW-571)
- Video signal Input Board: EW-573
- Blank tape: BCT-20G or BCT-20M
- Alignment Tape: CR5-2APS (8-960-098-44): OXIDE
  CR5-1BPS (8-960-096-91): METAL

【Switches setting on the function panel】
Do not change the setting below unless otherwise specified.

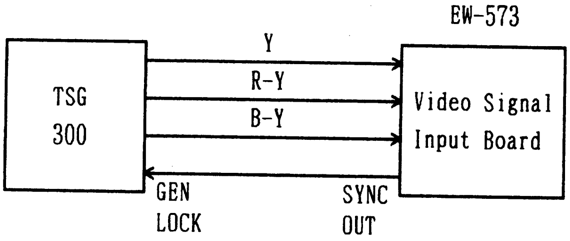
- VTR switch: STBY
- OUTPUT/DCC selector: BARS

*Alignment tape: CR5-2APS

TIME min.sec	VIDEO TRACK	DESCRIPTION
0:00	75% Color Bar	
3:00	Multi Burst	Y : 0.5,1,2,3,4.1,4.5 MHz C : 0.2,0.5,1,1.5 MHz
6:00	Bowtie & 10T	C : No Signal
9:00	Pulse & Bar	
11:00	Sw'P Shifted	
13:00	Composite Monoscope	Video Phase
15:00		

【Preparation】 (When using the signal exept from the built-in color-bar.)

1. Remove the EN-79P board.
2. Insert the Video Signal Input Board and connect as illustrated below.



3. After adjustment is completed, install the EN-79P board and check (or readjust) Sec. 8-5-4. CTDM Level Adjustment and 8-5-16. Y Input Level Adjustment using a BARS signal from the camera.

*Alignment tape: CR5-1BPS

TIME min.sec	VIDEO	AFM
0:00	RF SWEEP Marker 1, 2, 4, 6, 8, 10, 12 MHz	No-Signal
2:00	60% H, SWEEP (CTDM) Marker 0.5, 1, 2, 3, 4, 5 MHz	
5:00	PULSE & BAR (CTDM)	
8:00	MULTI BURST Y : 0.5,1,2,4,5,5.5 MHz C : 0.2,0.5,1,1.5,2 MHz	
11:00	PULSE & BAR	
14:00	100% COLOR BARS	400Hz sine wave (25KHz deviation)
16:30		(75KHz deviation)
17:00	50% BOWTIE & 10T	No-Signal
19:00	LINE 17A SIGNAL	
22:00	QUAD PHASE	
24:00	FLAT FIELD	
26:00	100% COLOR BARS with dropout	
28:00	COMPOSITE H, SWEEP with VISC	
30:00		

8-5-1. PLL VCO Error Voltage Adjustment

- Setting

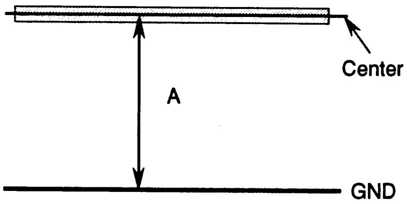
Equipment: Dualscope Oscilloscope	Board: VDA-11P board

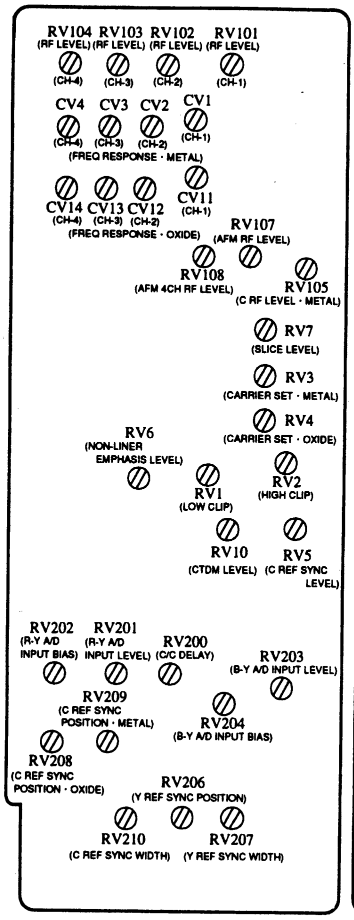
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

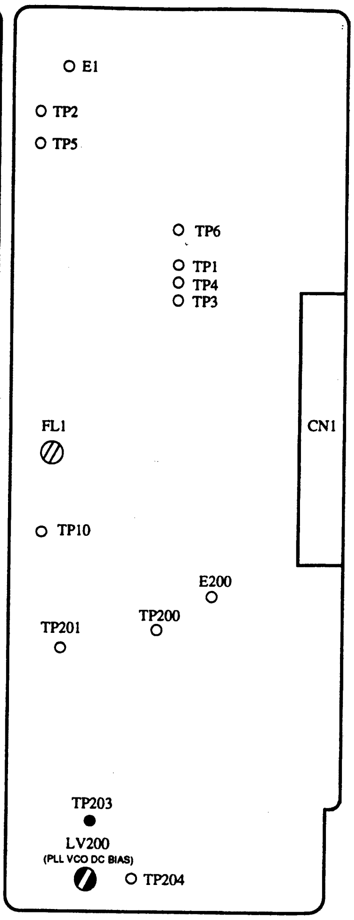
- Adjustment procedures

- Test point : TP203/VDA-11P
- Adj. point : ⊘LV200 (PLL VCO DC BIAS)/VDA-11P
- Spec. : A = 1.80 ± 0.05Vdc


Center
A
GND


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-2. R-Y, B-Y A/D Clamp Adjustment

- Setting

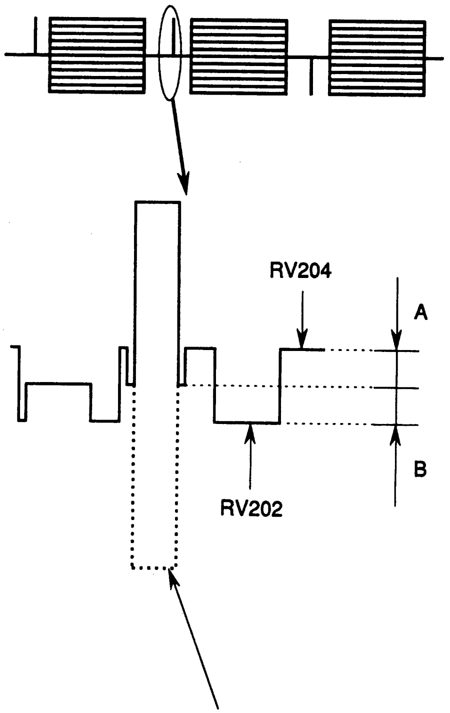
Equipment: Dualscope Oscilloscope	Board: VDA-11P board

- Preparation

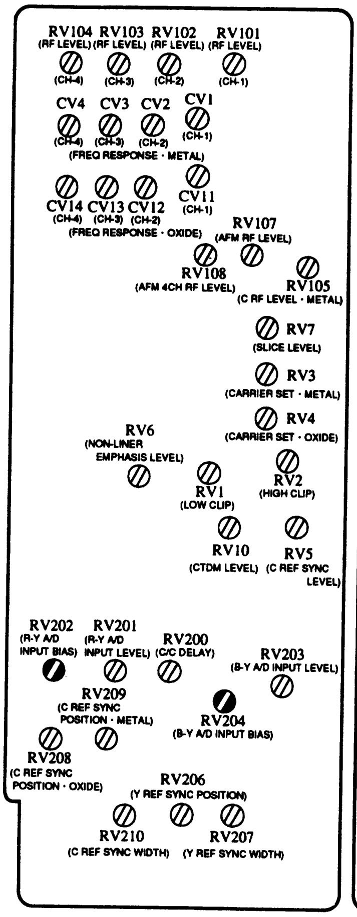
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

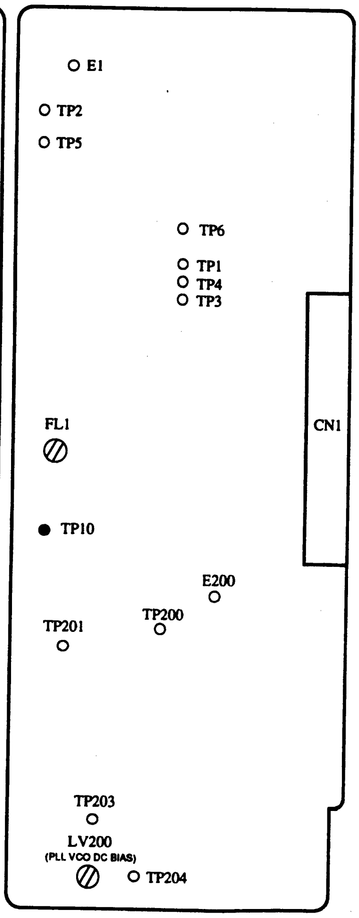
- Test point : TP10/VDA-11P
- Adj. point : R-Y Level
  ⊘RV202 (R-Y A/D INPUT BIAS)/VDA-11P
  B-Y Level
  ⊘RV204 (B-Y A/D INPUT BIAS)/VDA-11P
- Spec. : A = B = 0 (No difference)


RV204
A
B
RV202

Colorful pulse is output from the top or bottom.


RV104 RV103 RV102 RV101
(RF LEVEL) (RF LEVEL) (RF LEVEL) (RF LEVEL)
(CH-4) (CH-3) (CH-2) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · METAL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · OXIDE)
RV107
(AFM RF LEVEL)
RV108
(AFM 4CH RF LEVEL)
RV105
(C RF LEVEL · METAL)
RV7
(SLICE LEVEL)
RV3
(CARRIER SET · METAL)
RV4
(CARRIER SET · OXIDE)
RV6
(NON-LINER EMPHASIS LEVEL)
RV1
(LOW CLIP)
RV2
(HIGH CLIP)
RV10
(CTDM LEVEL)
RV5
(C REF SYNC LEVEL)
RV202
(R-Y A/D INPUT BIAS)
RV201
(R-Y A/D INPUT LEVEL)
RV200
(C/C DELAY)
RV203
(B-Y A/D INPUT LEVEL)
RV209
(C REF SYNC POSITION · METAL)
RV204
(B-Y A/D INPUT BIAS)
RV208
(C REF SYNC POSITION · OXIDE)
RV206
(Y REF SYNC POSITION)
RV210
(C REF SYNC WIDTH)
RV207
(Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200
(PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

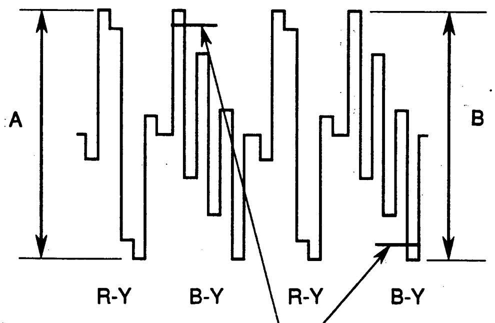
8-5-3. R-Y, B-Y A/D Input Level Adjustment

- Setting

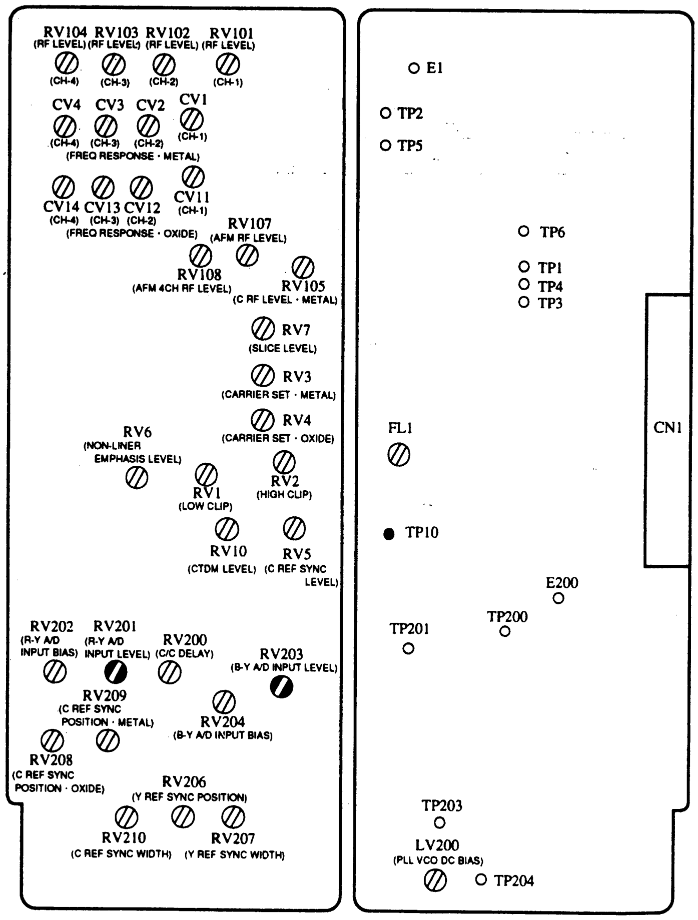
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation
  - built-in color-bar
  - Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures
  - Test point : TP10/VDA-11P
  - Adj. point : R-Y Level
    ⊘RV201 (R-Y A/D INPUT LEVEL)/VDA-11P
    B-Y Level
    ⊘RV203 (B-Y A/D INPUT LEVEL)/VDA-11P
  - Spec. : A = B = 750 ± 10 mVp-p


A
B
R-Y
B-Y
R-Y
B-Y

CF pulse is output lightly.


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE) VDA-11/P BOARD(COMPONENT SIDE)

8-5-4. CTDM Level Adjustment

- Setting

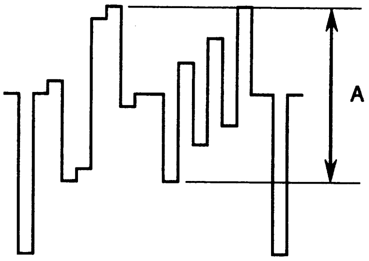
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

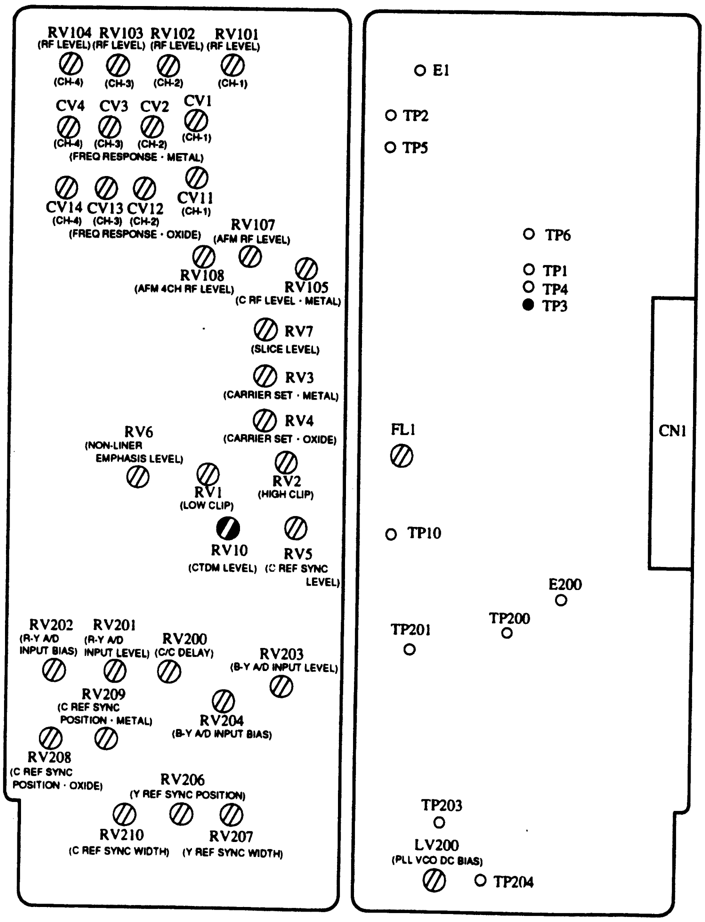
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP3/VDA-11P
- Adj. point : ⊘RV10 (CTDM LEVEL)/VDA-11P
- Spec. : A = 667 ± 10 mVp-p




RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE)

VDA-11/P BOARD(COMPONENT SIDE)

8-5-5. C REF Sync Level Adjustment

- Setting

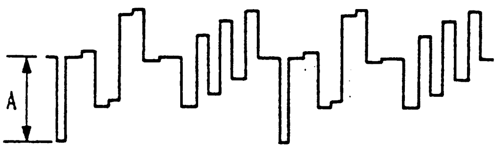
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

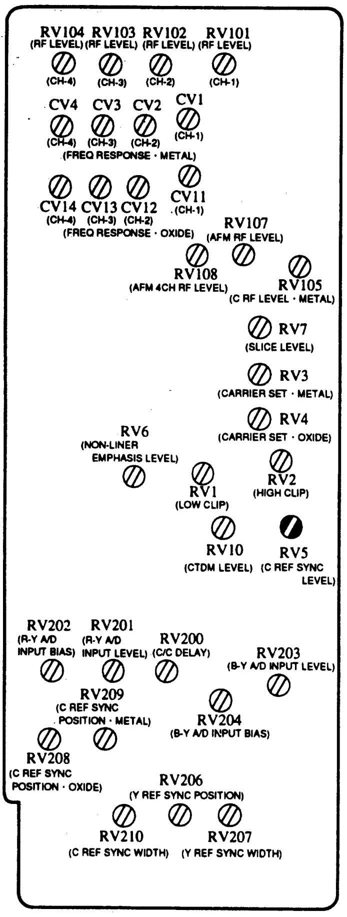
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

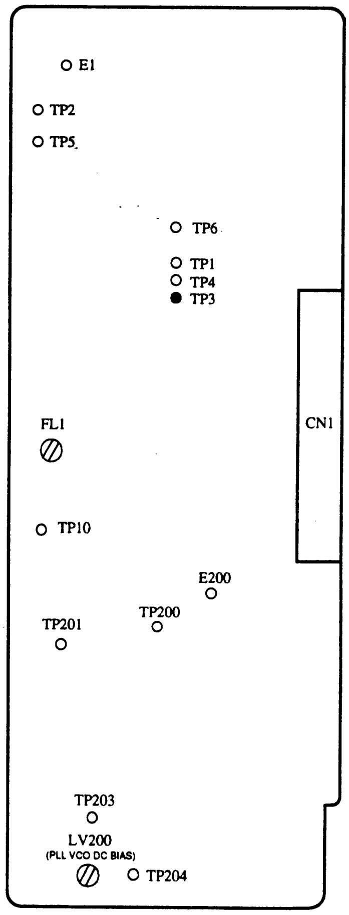
- Test point : TP3/VDA-11P
- Adj. point : ●RV5 (C REF SYNC LEVEL)/VDA-11P
- Spec. : A = 0.598 ± 0.01V



TRIG : INT


RV104
(RF LEVEL)
(CH-4)
RV103
(RF LEVEL)
(CH-3)
RV102
(RF LEVEL)
(CH-2)
RV101
(RF LEVEL)
(CH-1)
CV4
(CH-4)
CV3
(CH-3)
CV2
(CH-2)
CV1
(CH-1)
(FREQ RESPONSE · METAL)
CV14
(CH-4)
CV13
(CH-3)
CV12
(CH-2)
CV11
(CH-1)
(FREQ RESPONSE · OXIDE)
RV107
(AFM RF LEVEL)
RV108
(AFM 4CH RF LEVEL)
RV105
(C RF LEVEL · METAL)
RV7
(SLICE LEVEL)
RV3
(CARRIER SET · METAL)
RV4
(CARRIER SET · OXIDE)
RV6
(NON-LINER EMPHASIS LEVEL)
RV1
(LOW CLIP)
RV2
(HIGH CLIP)
RV10
(CTDM LEVEL)
RV5
(C REF SYNC LEVEL)
RV202
(R-Y A/D INPUT BIAS)
RV201
(R-Y A/D INPUT LEVEL)
RV200
(C/C DELAY)
RV203
(B-Y A/D INPUT LEVEL)
RV209
(C REF SYNC POSITION · METAL)
RV204
(B-Y A/D INPUT BIAS)
RV208
(C REF SYNC POSITION · OXIDE)
RV206
(Y REF SYNC POSITION)
RV210
(C REF SYNC WIDTH)
RV207
(Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200
(PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-6. C REF Sync Pulse Width Adjustment

- Setting

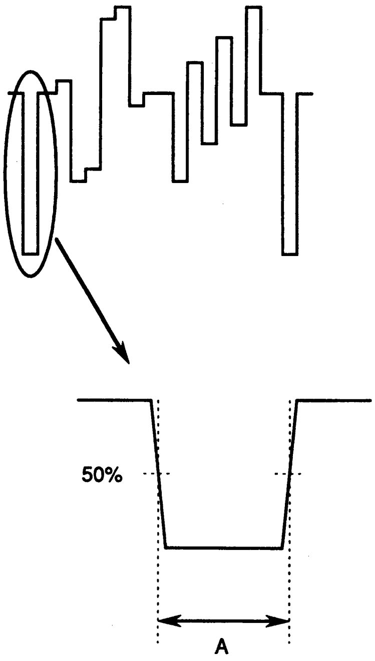
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

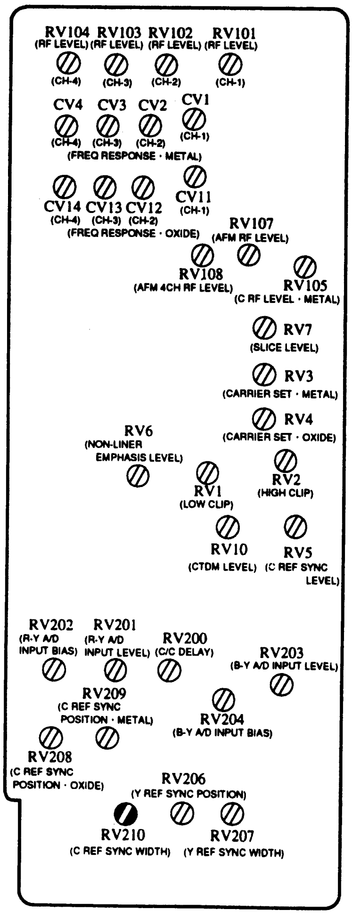
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

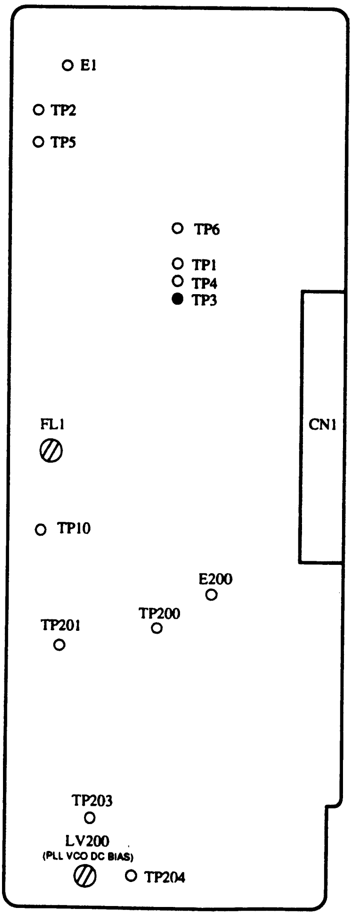
- Adjustment procedures

- Test point : TP3/VDA-11P
- Adj. point : ●RV210 (C REF SYNC WIDTH)/VDA-11P
- Spec. : A = 2.00 ± 0.05 μ sec




RV104
(RF LEVEL)
(CH-4)
RV103
(RF LEVEL)
(CH-3)
RV102
(RF LEVEL)
(CH-2)
RV101
(RF LEVEL)
(CH-1)
CV4
(CH-4)
CV3
(CH-3)
CV2
(CH-2)
CV1
(CH-1)
(FREQ RESPONSE · METAL)
CV14
(CH-4)
CV13
(CH-3)
CV12
(CH-2)
CV11
(CH-1)
(FREQ RESPONSE · OXIDE)
RV107
(AFM RF LEVEL)
RV108
(AFM 4CH RF LEVEL)
RV105
(C RF LEVEL · METAL)
RV7
(SLICE LEVEL)
RV3
(CARRIER SET · METAL)
RV4
(CARRIER SET · OXIDE)
RV6
(NON-LINER EMPHASIS LEVEL)
RV1
(LOW CLIP)
RV2
(HIGH CLIP)
RV10
(CTDM LEVEL)
RV5
(C REF SYNC LEVEL)
RV202
(R-Y A/D INPUT BIAS)
RV201
(R-Y A/D INPUT LEVEL)
RV200
(C/C DELAY)
RV203
(B-Y A/D INPUT LEVEL)
RV209
(C REF SYNC POSITION · METAL)
RV204
(B-Y A/D INPUT BIAS)
RV208
(C REF SYNC POSITION · OXIDE)
RV206
(Y REF SYNC POSITION)
RV210
(C REF SYNC WIDTH)
RV207
(Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200
(PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-7. C REF Sync Trapezoid Adjustment

- Setting

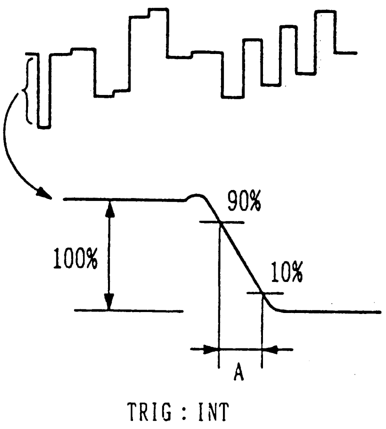
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

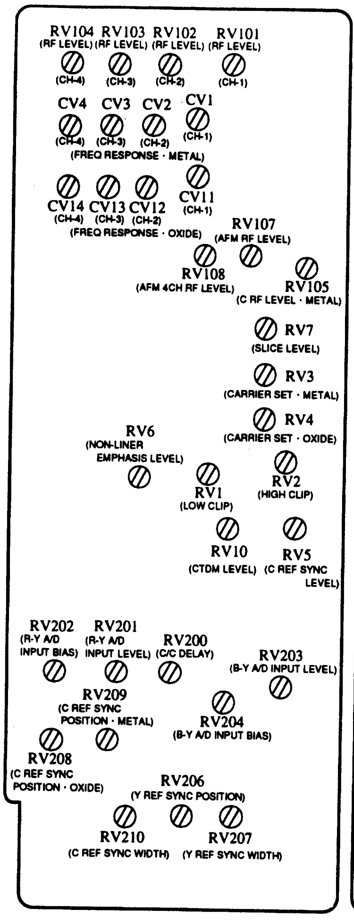
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

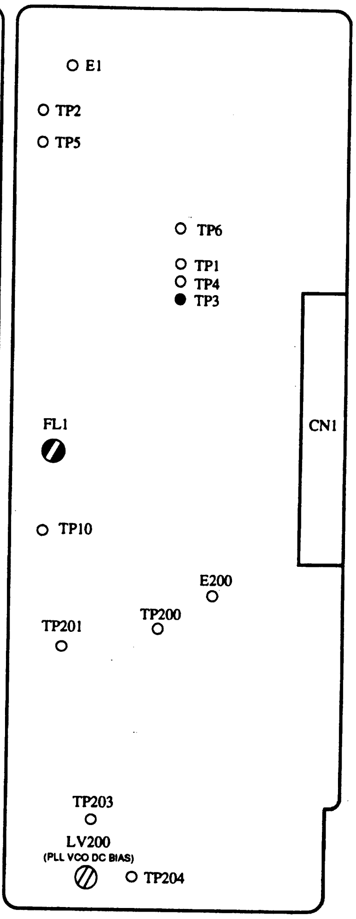
- Adjustment procedures

- Test point : TP3/VDA-11P
- Adj. point : ⊘FL1/VDA-11P
- Spec. : A = 220±20nsec


90%
100%
10%
A
TRIG : INT


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-8. C Carrier/Deviation Adjustment

1) Adjustment using Spectrum Analyzer

Step.1

- Setting

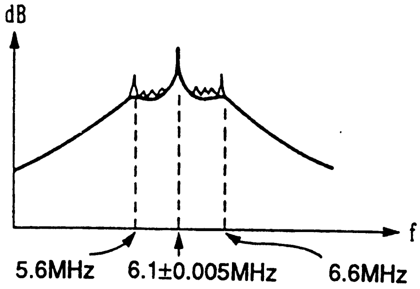
Equipment: Spectrum Analyzer	Board: VDA-11P board

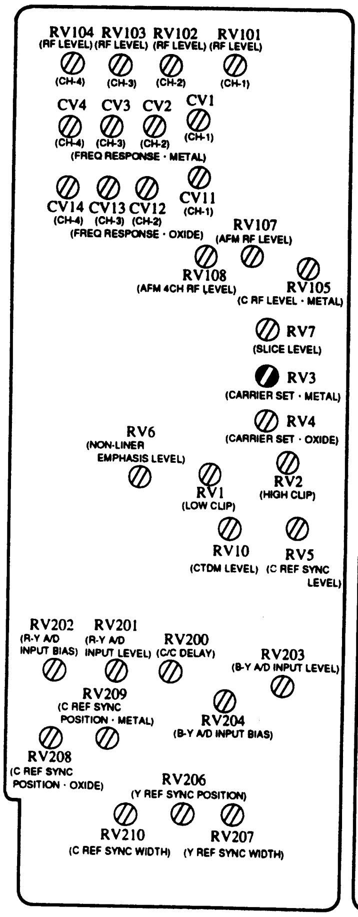
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

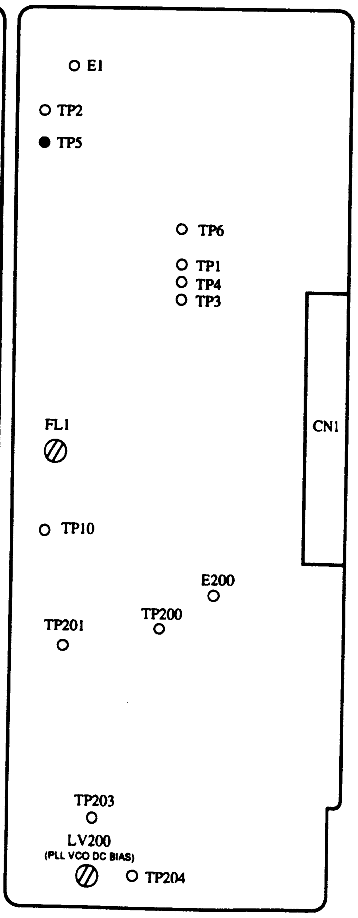
- Adjustment procedures

- Test point : TP5/VDA-11P
- Adj. point : Carrier adjustment
  ⊘RV3
  (CARRIER SET METAL)/VDA-11P
  Deviation adjustment
  ⊘RV1 (IC2)/VDA-11
- Spec. : Carrier adjustment
  Set the center peak level to 6.1MHz.
  : Deviation adjustment
  Set the gap between the two peaks
  (5.6MHz and 6.6MHz) to 1MHz.

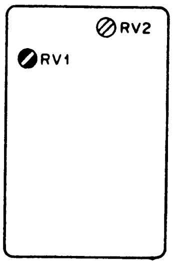



RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV6 (NON-LINER EMPHASIS LEVEL)
RV4 (CARRIER SET · OXIDE)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP201
TP200
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)



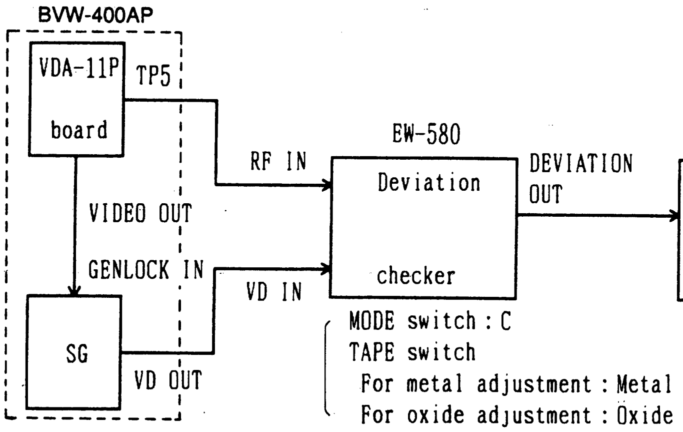
HIC (IC2)
(COMPONENT SIDE)
–On the VDA-11/11P Board–

2) Adjustment using Deviation Checker

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Connection

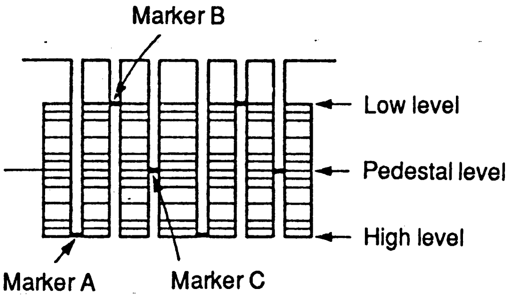

BVW-400AP
VDA-11P board
TP5
VIDEO OUT
GENLOCK IN
SG
VD OUT
RF IN
VD IN
EW-580
Deviation checker
DEVIATION OUT
Oscilloscope
MODE switch : C
TAPE switch
For metal adjustment : Metal
For oxide adjustment : Oxide

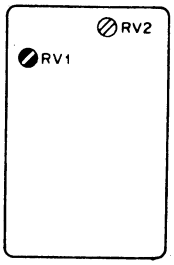
- Preparation

• built-in color-bar • Insert the BCT-20M and put the unit into the REC mode. • After metal adjustment is completed, insert the BCT-20G and put the unit into the REC mode.

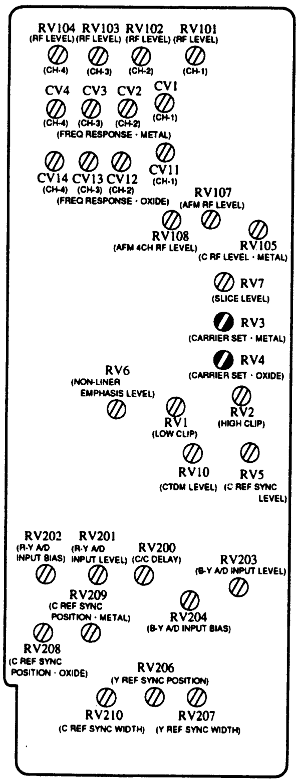
- Adjustment procedures

- Test point : DEVIATION OUT (DEVIATION CHECKER)
- Adj. point : • METAL
  Marker C adjustment (Carrier setting)
  ⊘RV3/VDA-11P
  Marker A and B adjustment (deviation)
  ⊘RV1 (IC2)/VDA-11P
  • OXIDE
  Marker C Adjustment (Carrier setting)
  ⊘RV4/VDA-11P
- Spec. : Procedure
  1. Set marker C to the pedestal level.
  2. Set marker A to the high level and marker B to the low level.
  3. Set oxide marker C to the pedestal level.


Marker B
Low level
Pedestal level
High level
Marker A
Marker C



HIC (IC2)
(COMPONENT SIDE)
–On the VDA-11/11P Board–


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)

Step 2

- Setting

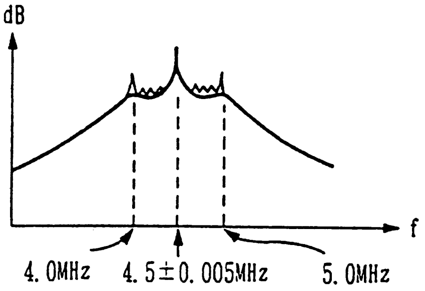
Equipment: Spectrum Analyzer	Board: VDA-11P board

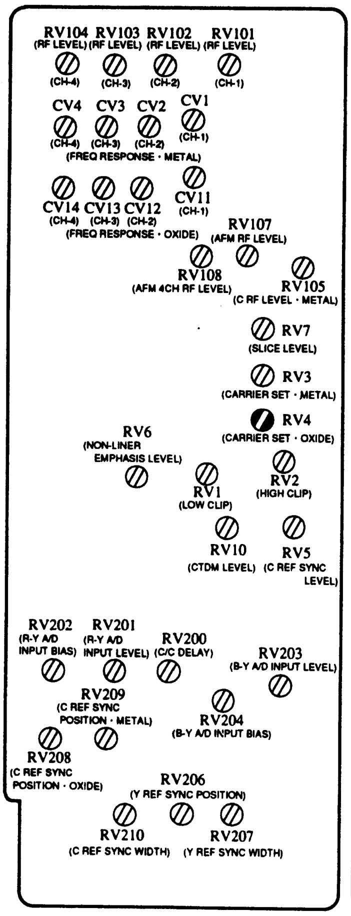
- Preparation

- built-in color-bar
- Insert the BCT-20G and put the unit into the REC mode.

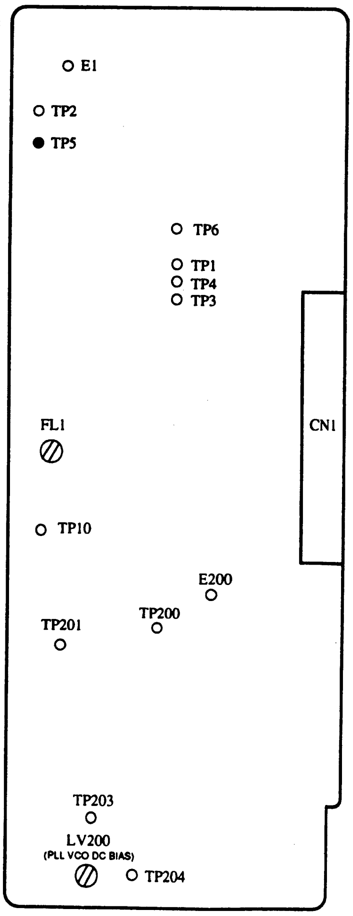
- Adjustment procedures

- Test point : TP5/VDA-11P
- Adj. point : Carrier adjustment
  ⊘RV4
  (CARRIER SET OXIDE)
  /VDA-11P
- Spec. : Carrier adjustment
  Set the center peak level to 4.5MHz.




RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-9. C Low Clip Adjustment

- Setting

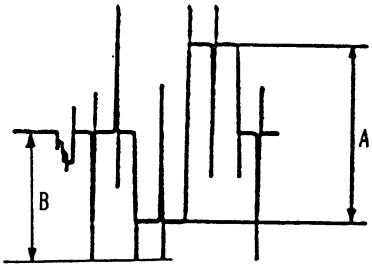
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

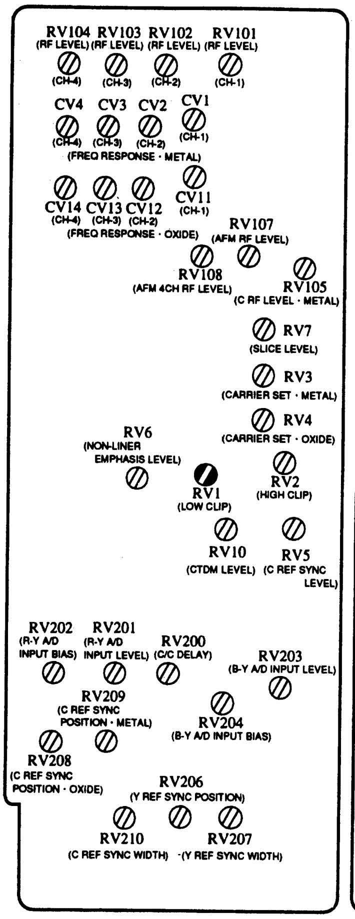
- Input signal: pulse & bar (3T, 2T)
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

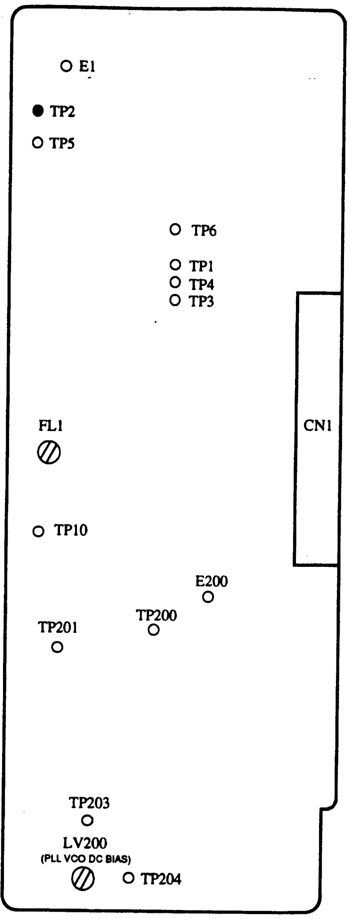
- Test point : TP2/VDA-11P
- Adj. point : ⊘RV1 (LOW CLIP)
  /VDA-11P
- Spec. : A = R-Y/B-Y level
  B = A × 130±5%



TRIG : HD/SG


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-10. C High Clip Adjustment

- Setting

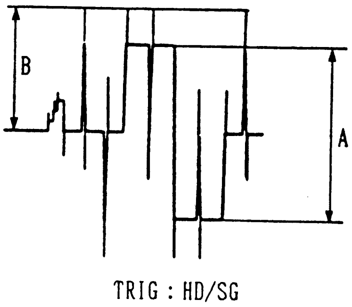
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

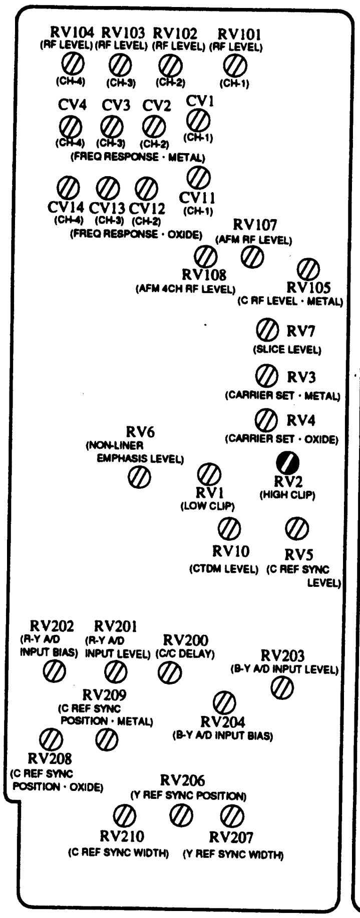
- Preparation

- Input signal: pulse & bar (3T, 2T)
- Insert the BCT-20M and put the unit into the REC mode.
- After level A is measured, set the chroma level to +6dB and adjust level B.

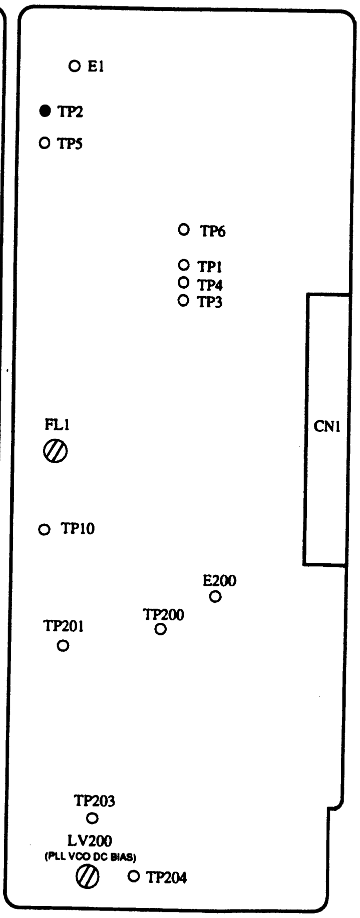
- Adjustment procedures

- Test point : TP2/VDA-11P
- Adj. point : ●RV2 (HIGH CLIP)
  /VDA-11P
- Spec. : A= R-Y/B-Y level
  B= A × 285±5%


B
A
TRIG : HD/SG


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

- Note

- If the chroma level of the signal generator can not be +6dB, remove the R-Y, B-Y terminated resistors R3 and R4 on the Video Signal Input Board (EW-573) temporarily and perform the adjustment.

8-5-11. C Nonlinear Emphasis Level Adjustment

- Setting

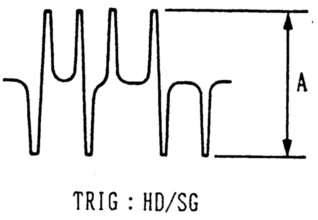
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

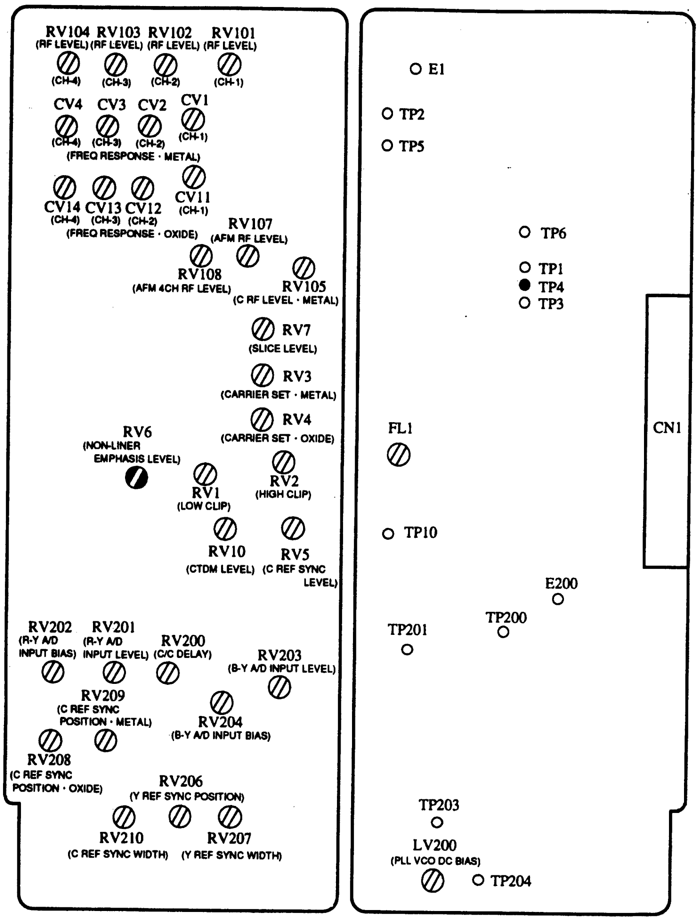
- Preparation

> - Input signal: pulse & bar (3T, 2T)
> - Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP4/VDA-11P
- Adj. point : ⊘RV6 (NON-LINEAR EMPHASIS LEVEL)/VDA-11P
- Spec. : A=76±2mV




RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE)

VDA-11/P BOARD(COMPONENT SIDE)

8-5-12. C REC HF Adjustment

- Setting

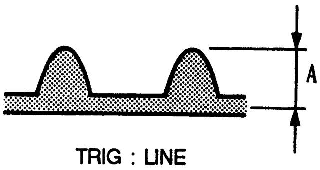
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

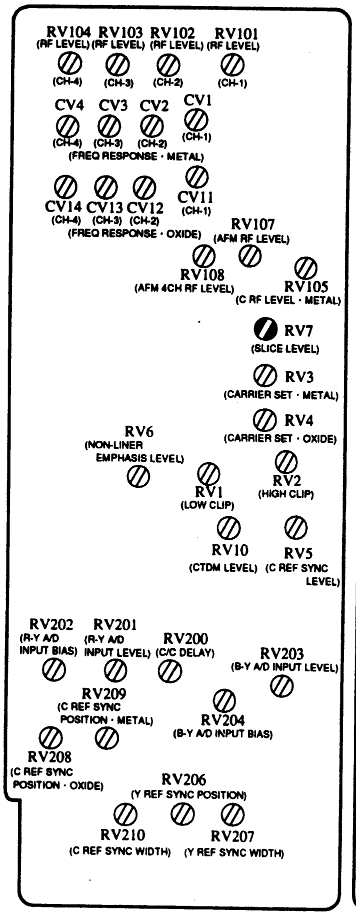
- Y, B-Y input signal: 0% flat field
- R-Y input signal: H sweep (For only RF, 1Vp-p/75ohms) TP-39/Extention board.
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

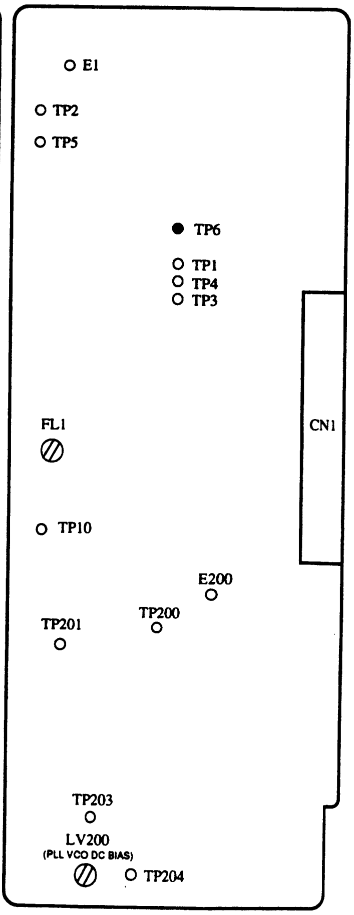
- Test point : TP6/VDA-11P
- Adj. point : ⊘RV7 (SLICE LEVEL)/VDA-11P
- Spec. : A=60±2mVp-p
  (Measured at hte waveform center.)



TRIG : LINE


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-13. C MOD Carrier Balance Adjustment

- Setting

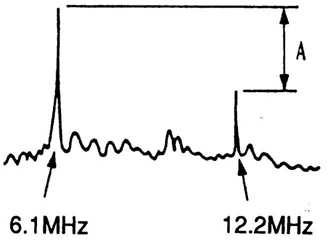
Equipment: Spectrum Analyzer	Board: VDA-11P board

- Preparation

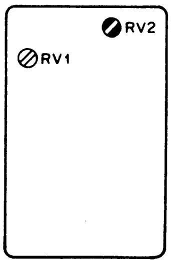
- Input signal: 0% flat field
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

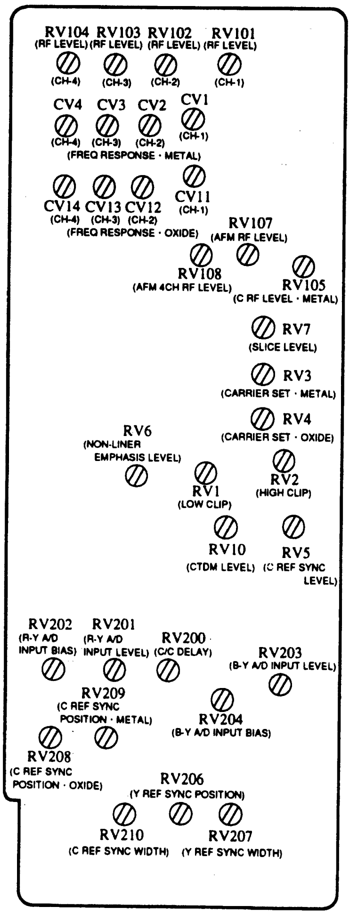
- Test point : TP5/VDA-11P
- Adj. point : ⊘RV2 (IC2)/VDA-11P
- Spec. : Minimize the level at 12.2MHz. (A=40dB or more).



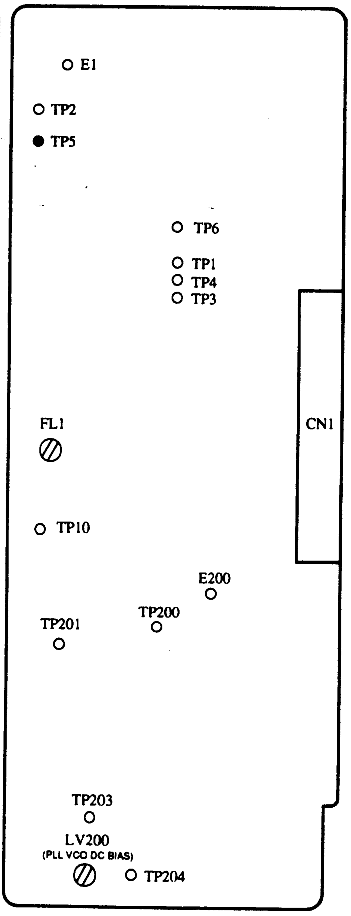
TRIG : INT



HIC (IC2)
(COMPONENT SIDE)
–On the VDA-11/11P Board–


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-14. Y REF Sync Position Adjustment

- Setting

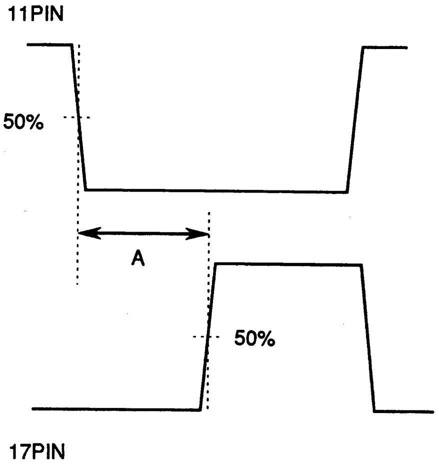
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

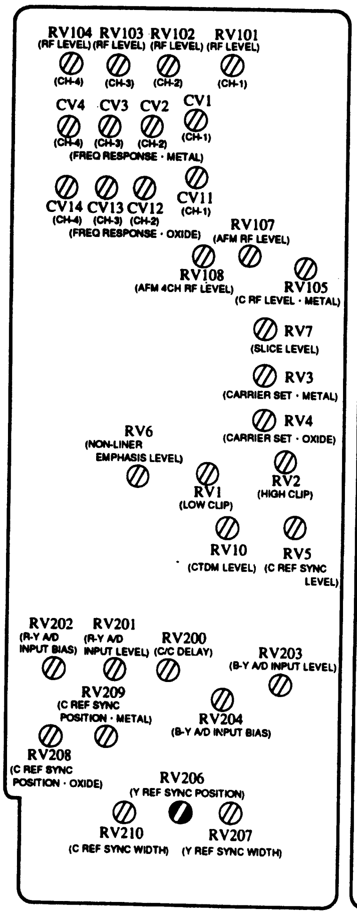
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

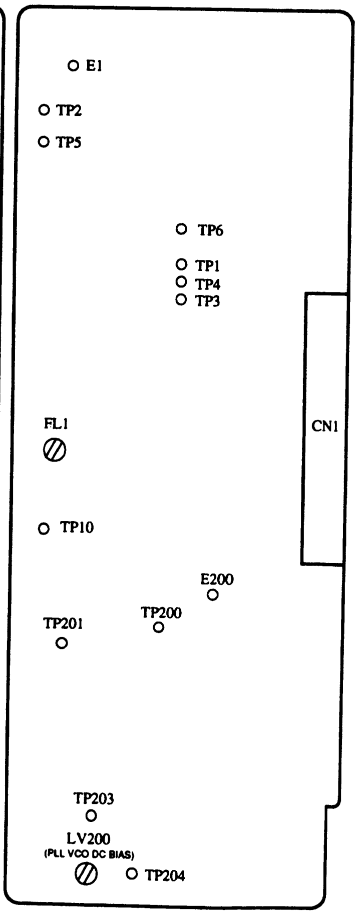
- Adjustment procedures

- Test point : TP11/Extension board
  TP17/Extension board
- Adj. point : ⊘RV206 (Y REF SYNC POSITION)/VDA-11P
- Spec. : A = 2.65 ± 0.02 μ sec


11PIN
50%
A
50%
17PIN


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP201
TP200
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-15. Y REF Sync Pulse Width Adjustment

- Setting

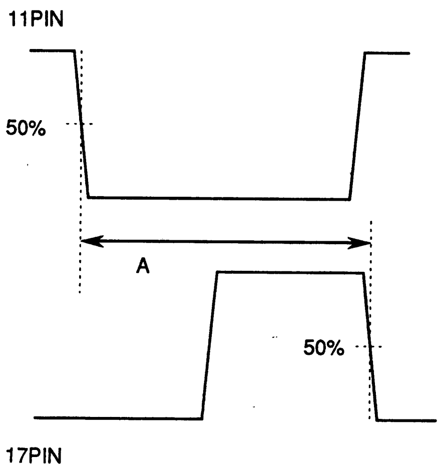
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

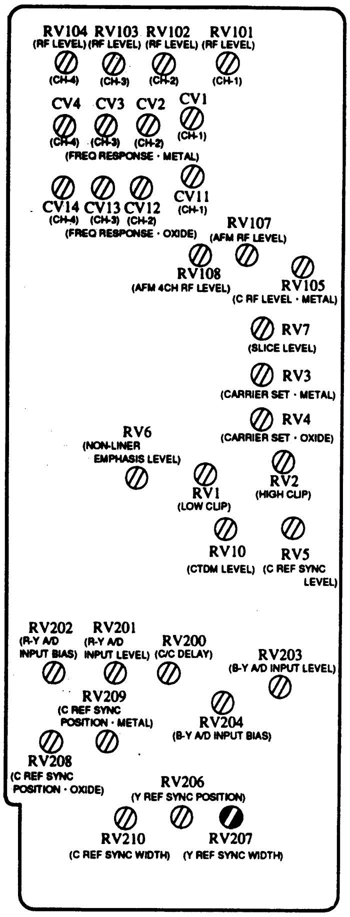
- Preparation

- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

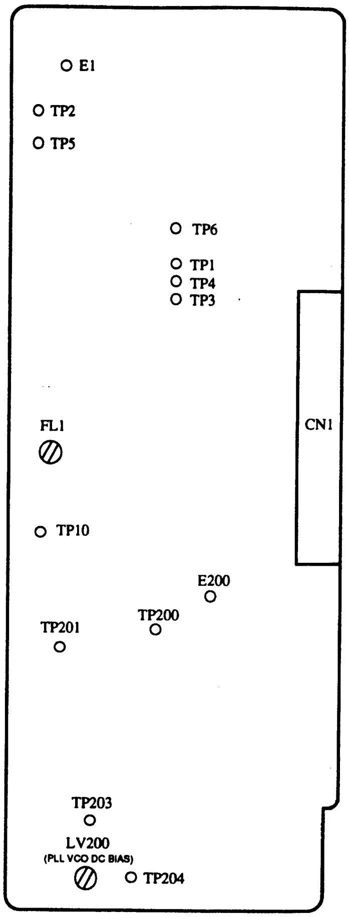
- Adjustment procedures

- Test point : TP11/Extension board
  TP17/Extension board
- Adj. point : ⊘RV207 (Y REF SYNC WIDTH)/VDA-11P
- Spec. : A = 5.00 ± 0.05 μ sec




RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-16. Y Input Level Adjustment

- Setting

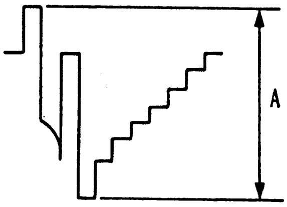
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Preparation

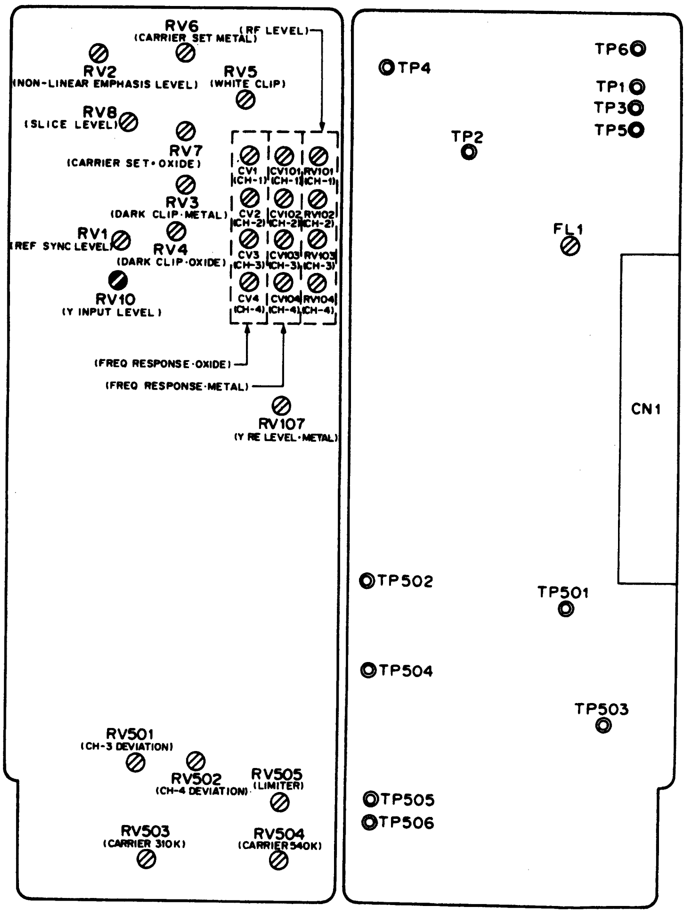
- built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP5/AFM-6P
- Adj. point : ⊘RV10 (Y LEVEL)/AFM-6P
- Spec. : A=1.0±0.02V



TRIG : INT


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET・OXIDE)
RV3
(DARK CLIP・METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP・OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE・OXIDE)
(FREQ RESPONSE・METAL)
RV107
(Y RE LEVEL・METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD (SOLDERING SIDE) AFM-6/P BOARD (COMPONENT SIDE)

8-5-17. Y REF Sync Level Adjustment

- Setting

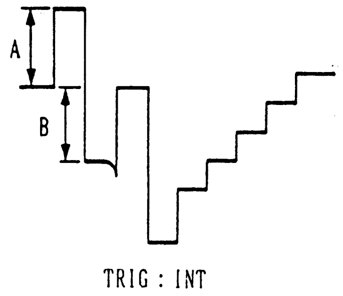
Equipment: Dualtrace Oscilloscop	Board: AFM-6P board

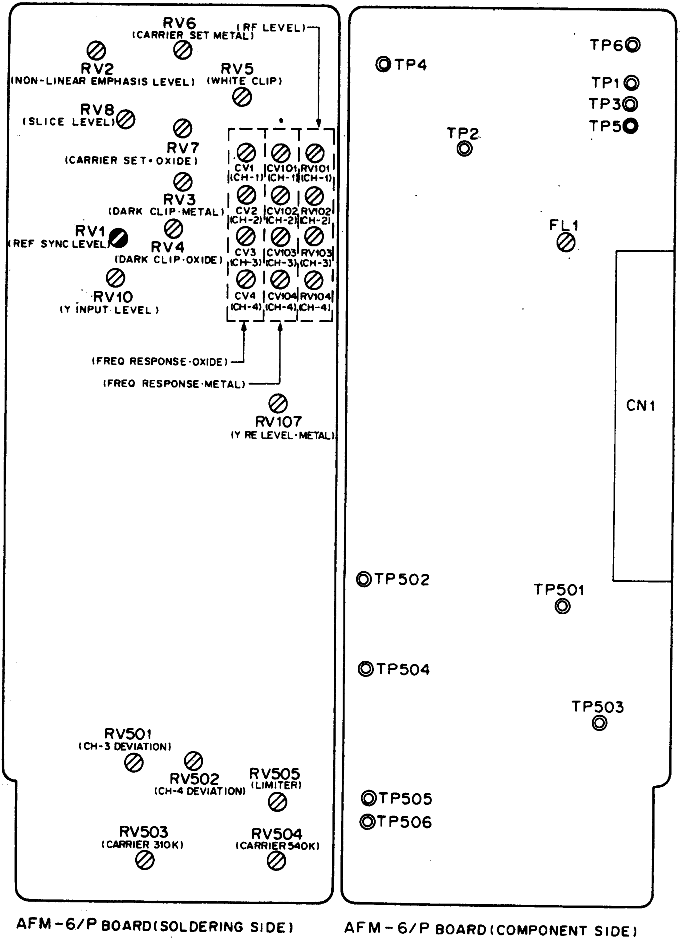
- Preparation

• built-in color-bar • Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP5/AFM-6P
- Adj. point : ⊘RV1 (REF SYNC LEVEL)/AFM-6P
- Spec. : A:B=100:125±2.5%




RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET·OXIDE)
RV3 (DARK CLIP·METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP·OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107 (Y RF LEVEL·METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506
AFM-6/P BOARD(SOLDERING SIDE)
AFM-6/P BOARD(COMPONENT SIDE)

8-5-18. Y REF Sync Slant Adjustment

- Setting

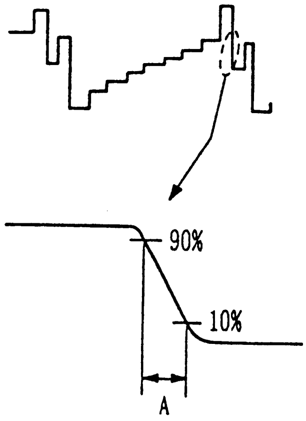
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Preparation

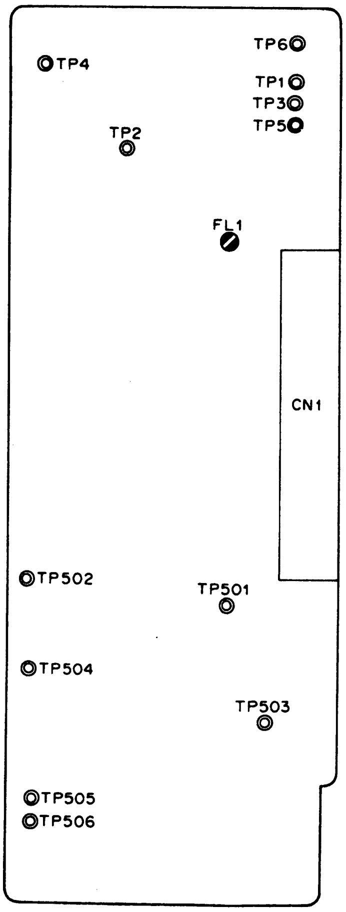
- Built-in-color-bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP5/AFM-6P
- Adj. point : ⊘FL1/AFM-6P
- Spec. : A=180±20nsec



TRIG : INT


TP6
TP4
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

8-5-19. Y Carrier/Deviation Adjustment

1) Adjustment using Spectrum Analyzer

Step 1

- Setting

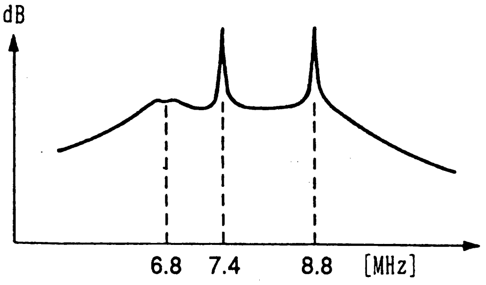
Equipment: Spectrum Analyzer	Board: AFM-6P board

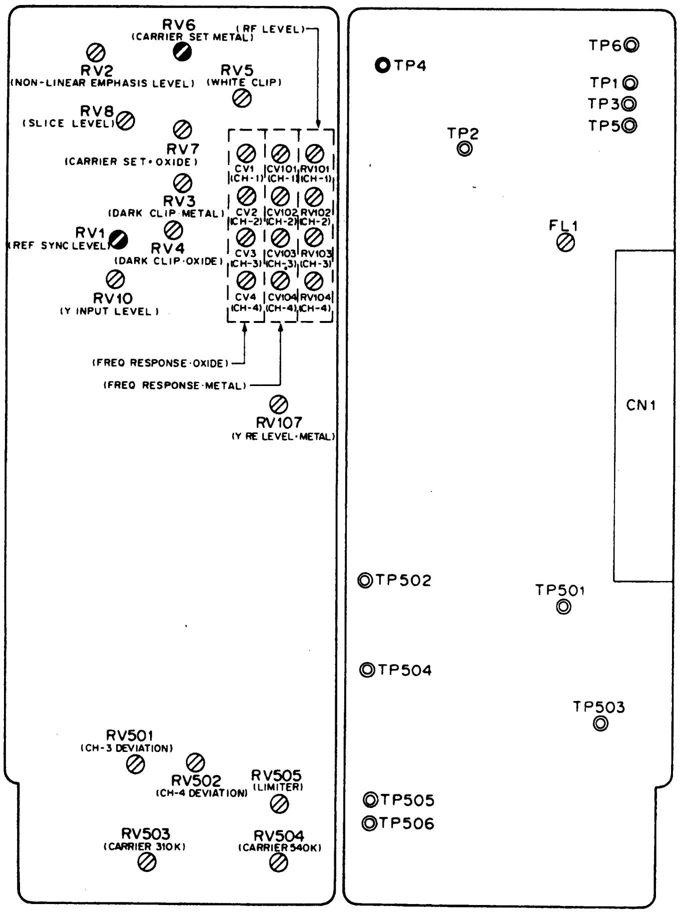
- Preparation

- Input signal: Color-bar
- Insert the BCT-20M and put the unit into the REC mode.

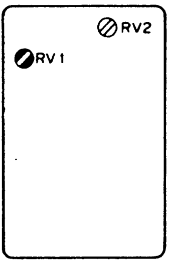
- Adjustment procedures

- Test point : TP4/AFM-6P
- Adj. point : Sync tip carrier adjustment
  ⊘RV6 (CARRIER SET METAL)/AFM-6P
  : Deviation adjustment
  ⊘RV1/AFM-6P
- Spec. : Sync tip carrier adjustment
  Set the left side peak level to 6.8MHz.
  : Deviation adjustment
  Set the gap between two peaks to 1.4MHz.




RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET·OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)



HIC (IC 1)
(COMPONENT SIDE)
- On the AFM-6/P Board -

Step 2

- Setting

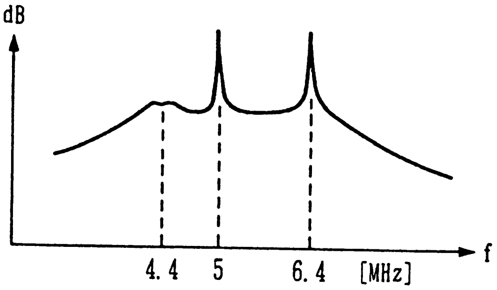
Equipment: Spectrum Analyzer	Board: AFM–6P board

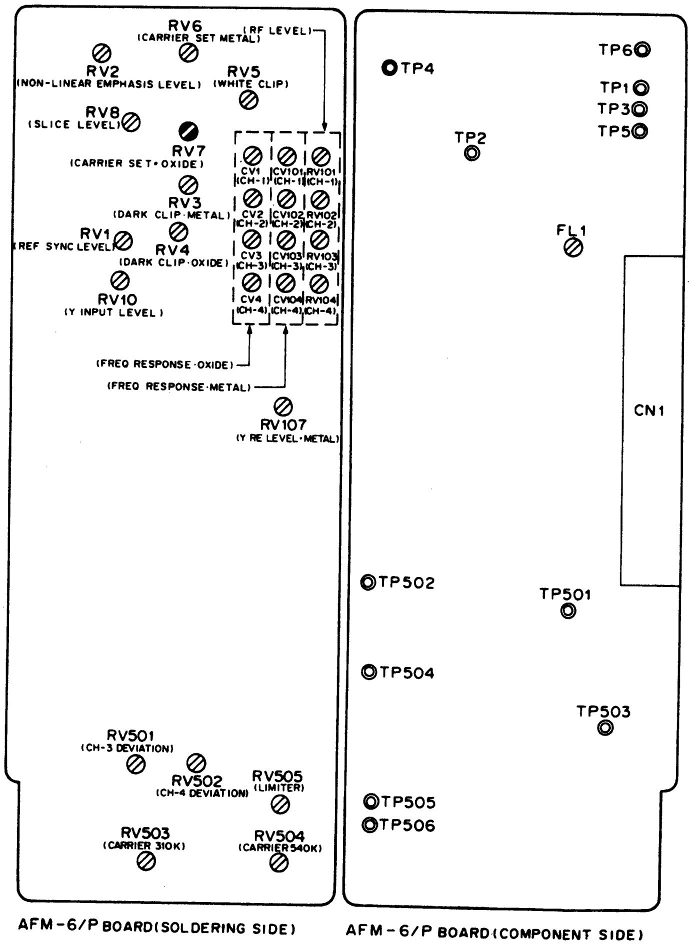
- Preparation

- Input signal: Color-bar
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP4/AFM-6P
- Adj. point : Sync tip carrier adjustment
  ● RV7 (CARRIER SET OXIDE)/AFM-6P
- Spec. : Sync tip carrier adjustment
  Set the left side peak level to 4.4 MHz.



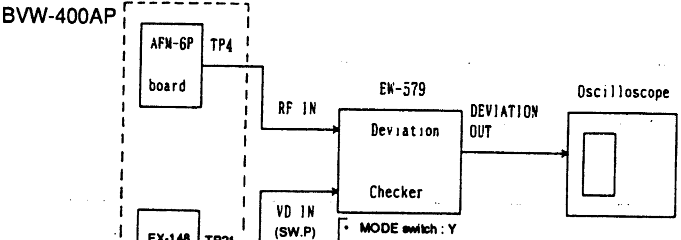

RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET•OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP2
TP6
TP1
TP3
TP5
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506
AFM-6/P BOARD(SOLDERING SIDE)
AFM-6/P BOARD(COMPONENT SIDE)

2) Adjustment Using Deviation Checker

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Connection


BVW-400AP
AFM-6P board
TP4
EX-148 board
TP21
RF IN
VD IN (SW.P)
EW-579
Deviation Checker
DEVIATION OUT
Oscilloscope

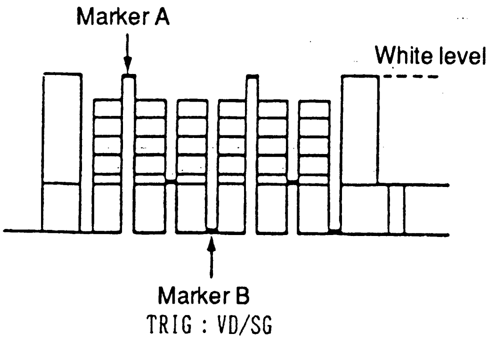
- MODE switch : Y
- TAPE switch
  For metal adjustment : Metal
  For oxide adjustment : Oxide
- CHROMA 100%/75% Switch: 100%

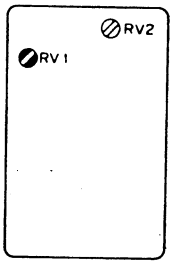
- Preparation

- Built-in color-bar
- Insert the BCT-20M and put the unit into the REC mode.
- After metal adjustment is completed, insert the BCT-20G and put the unit into the REC mode.

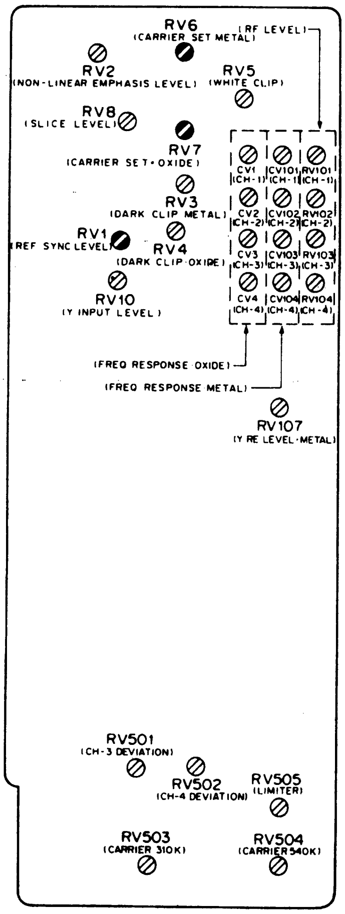
- Adjustment procedures

- Test point : DEVIATION OUT (DEVIATION CHECKER)
- Adj. point : METAL
  Marker B adjustment (CARRIER SETTING)
  ⊘ RV6 /AFM-6P
  Marker A adjustment (DEVIATION)
  ⊘ RV1/AFM-6P
  : OXIDE
  Marker B adjustment (CARRIER SETTING)
  ⊘ RV7 /AFM-6P
- Spec. : Procedure
  1. Set marker B to the sync tip level.
  2. Set marker A to the white peak level.
  3. Set oxide marker B to the sync tip level.


Marker A
White level
Marker B
TRIG : VD/SG



HIC (IC1)
(COMPONENT SIDE)
–On the AFM-6/6P Board–


RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET • OXIDE)
RV3 (DARK CLIP METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE OXIDE)
(FREQ RESPONSE METAL)
RV107 (Y RE LEVEL·METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)

8-5-20. Y Dark Clip Adjustment

- Setting

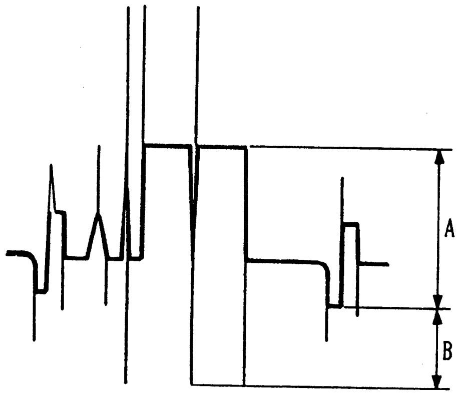
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Preparation

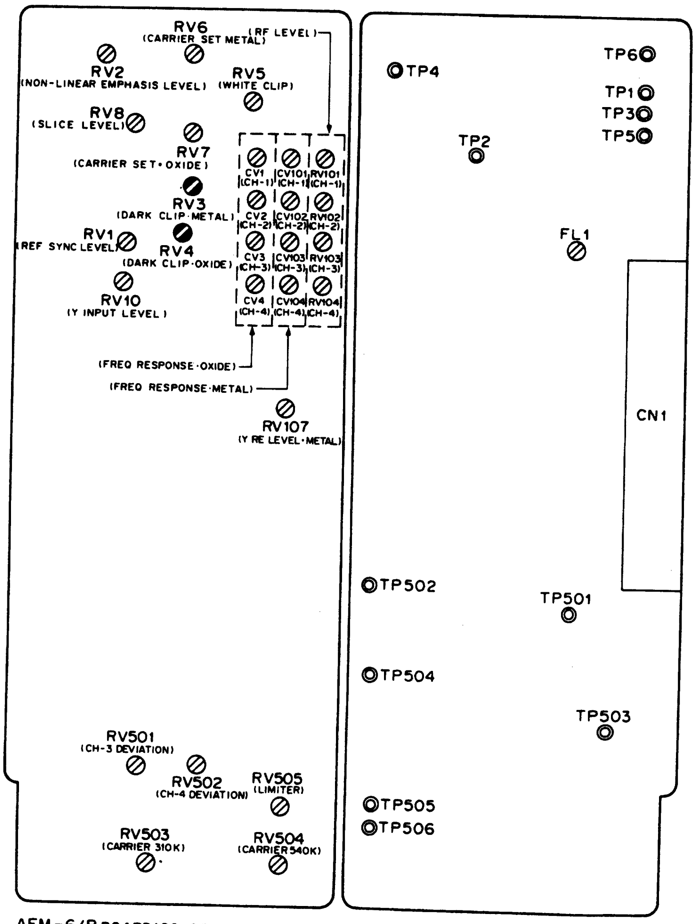
> - Input signal: MOD pulse & bar
> - Metal: Insert the BCT-20M and put the unit into the REC mode.
> - Oxide: Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP2/AFM-6P
- Adj. point : ⊘ RV3 (DARK CLIP METAL) /AFM-6P
  ⊘ RV4 (DARK CLIP OXIDE) /AFM-6P
- Spec. : B = A × 150 ± 2.5% (METAL)
  B = A × 65 ± 2.5% (OXIDE)



TRIG : HD/SG


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET・OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE)   AFM-6/P BOARD(COMPONENT SIDE)

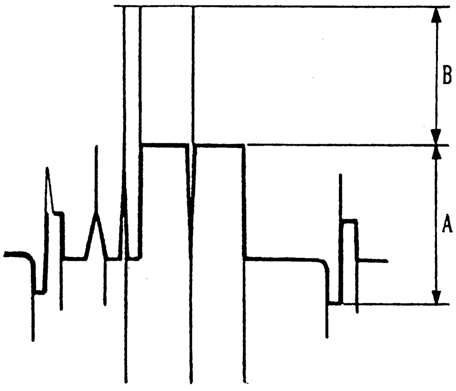
8-5-21. Y White Clip Adjustment

- Setting

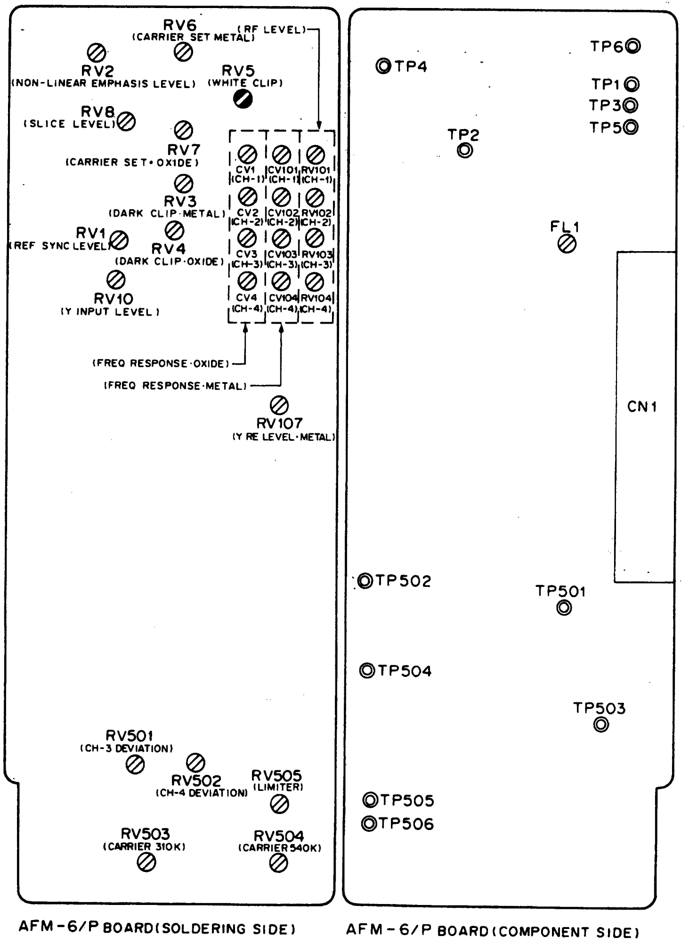
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation
  - Input signal: MOD pulse and bar
  - Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures
  - Test point : TP2/AFM-6P
  - Adj. point : ● RV5 (WHITE CLIP) /AFM-6P
  - Spec. : A = VS level
    B = A × 130 ± 2.5%



TRIG : HD/SG


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET・OXIDE)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
RV3
(DARK CLIP・METAL)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP・OXIDE)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
RV10
(Y INPUT LEVEL)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE・OXIDE)
(FREQ RESPONSE・METAL)
RV107
(Y RE LEVEL・METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD (SOLDERING SIDE) AFM-6/P BOARD (COMPONENT SIDE)

8-5-22. Y Nonlinear Emphasis Level Adjustment

- Setting

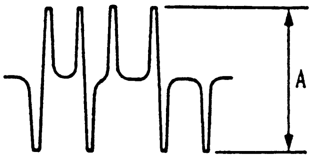
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

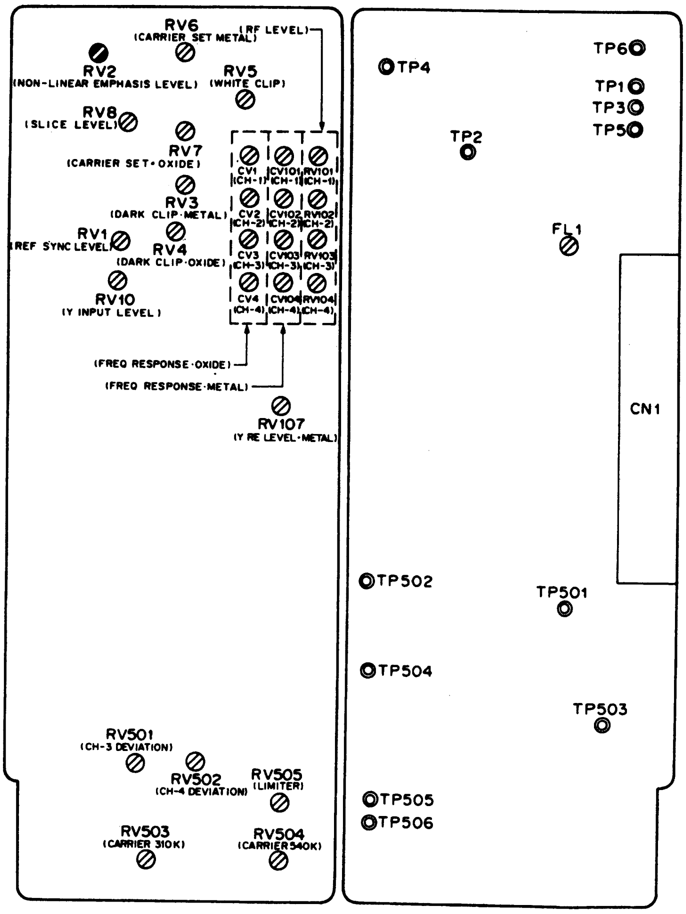
- Input signal: MOD pulse and bar
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP3/AFM-6P
- Adj. point : ⊘ RV2 (NON-LINEAR EMPHASIS) /AFM-6P
- Spec. : A = 90 ± 2mV



TRIG : HD/SG


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE) AFM-6/P BOARD(COMPONENT SIDE)

8-5-23. Y REC HF Adjustment

- Setting

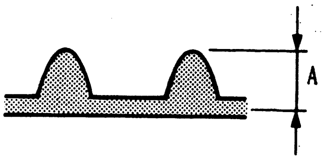
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

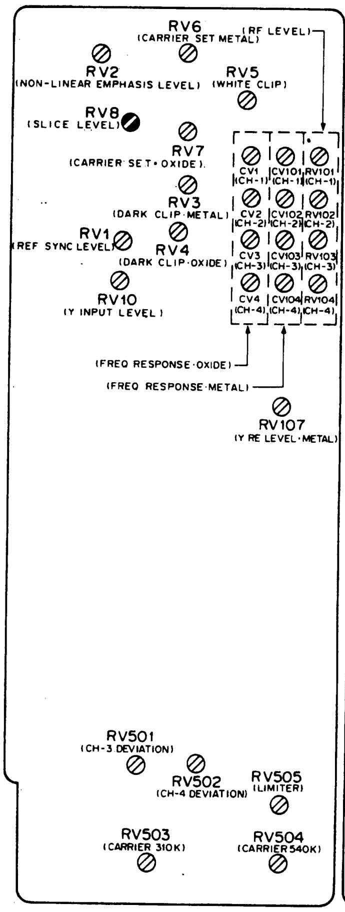
- Preparation

- Y input signal: H sweep (Sweep signal 115IRE and sync signal 40IRE/75-ohms termination)
  TP9/Extension board: AFM-6P
- Insert the BCT-20M and put the unit into the REC mode.

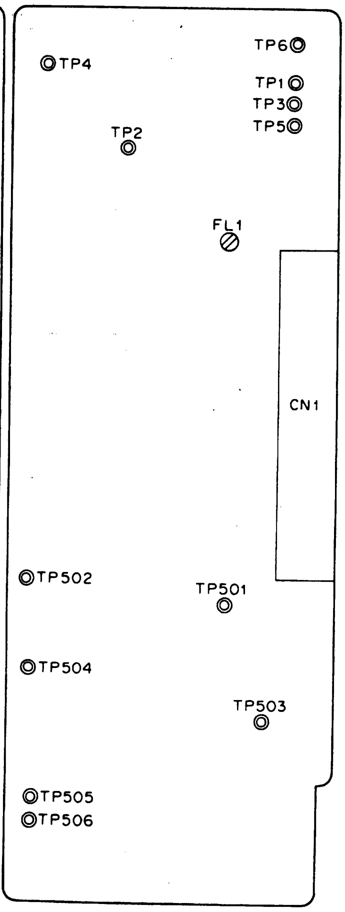
- Adjustment procedures

- Test point : TP6/AFM-6P
- Adj. point : ● RV8 (SLICE LEVEL)/AFM-6P
- Spec. : A = 150 ± 5mV
  (Measured at the waveform center.)




RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

8-5-24. Y MOD Carrier Balance Adjustment

- Setting

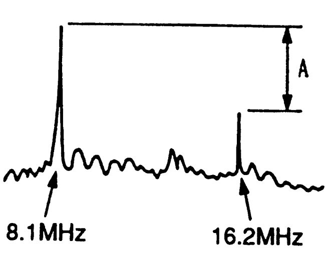
Equipment: Spectrum Analyzer	Board: AFM-6P board

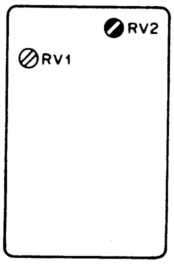
- Preparation

- Input signal: 50% flat field
- Insert the BCT-20M and put the unit into the REC mode.

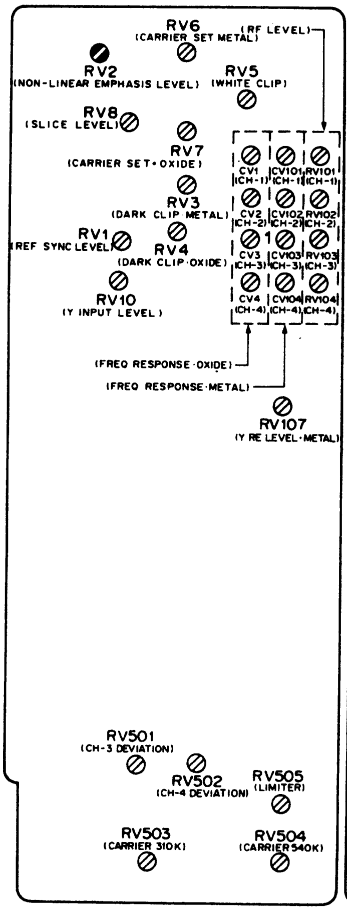
- Adjustment procedures

- Test point : TP4/AFM-6P
- Adj. point : ● RV2 (IC1)/AFM-6P
- Spec. : Minimize the level at 14MHz.
  (A = 40dB or more)

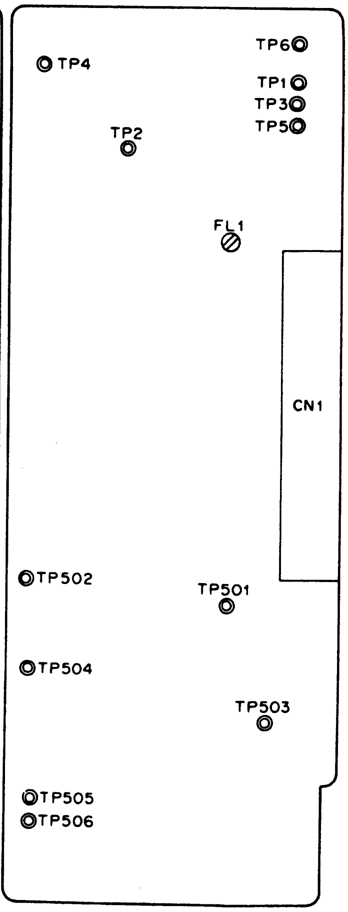




HIC (IC1)
(COMPONENT SIDE)
–On the AFM-6/6P Board–


RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET·OXIDE)
RV3 (DARK CLIP METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP·OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107 (Y RF LEVEL·METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

8-5-25. Y REC Current Tentative Adjustment (Oxide)

- Setting

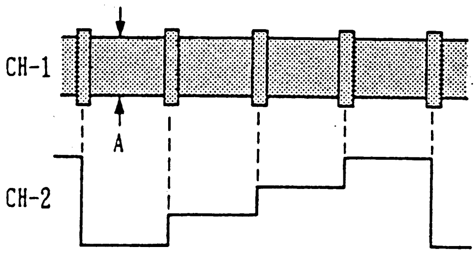
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

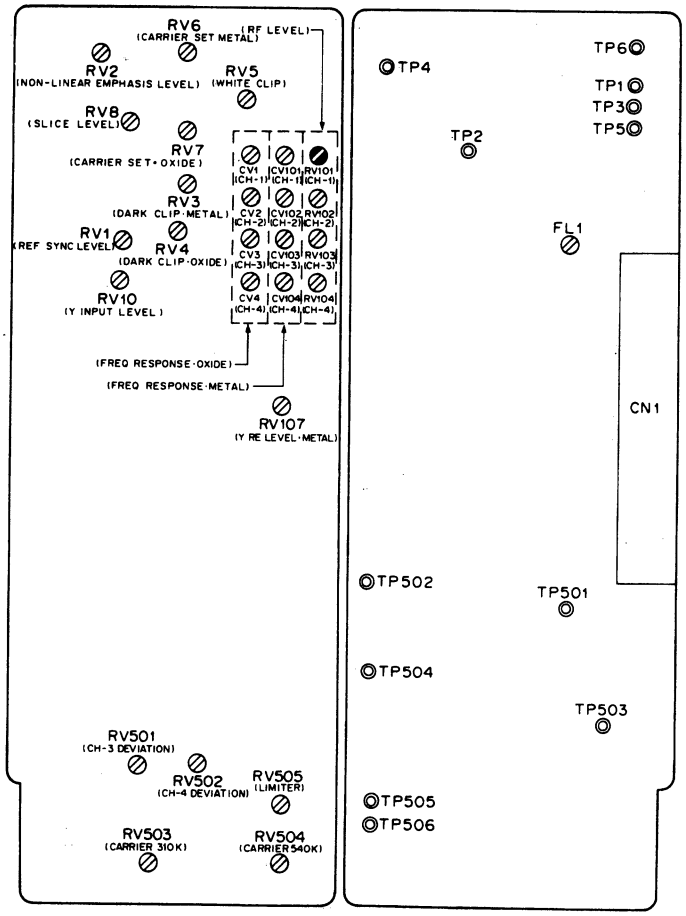
- Input signal: 50% flat field
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

- Test point : CH1: TP32/Extension board
  CH2: TP7/Extension board
- Adj. point : ⊘ RV101 (CH-1 RF LEVEL)
  /AFM-6P
- Spec. : A = 800 ± 20mV



TRIG : CH-2


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

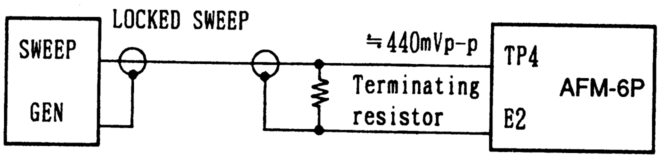
AFM-6/P BOARD (SOLDERING SIDE)　AFM-6/P BOARD (COMPONENT SIDE)

8-5-26. Y REC Current Frequency Response Adjustment (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Connection


SWEEP
GEN
LOCKED SWEEP
≒440mVp-p
Terminating resistor
TP4
E2
AFM-6P

- Preparation

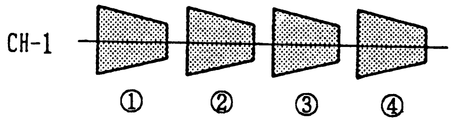
- Remove short-housing CNJ2 on the AFM-6P board, connect the Sweep Signal Generator between TP4 on the AFM-6P board and E2 on the AFM-6P board and supply a locked sweep signal.
- Insert the BCT-20G and put the unit into the REC PAUSE mode.
- After adjustment is completed, install short-housing CNJ2.

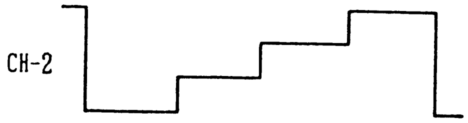
- Adjustment procedures

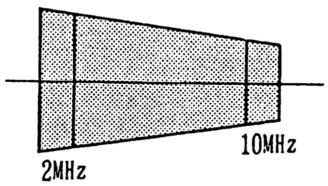
- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point :① : ● CV1/AFM–6P
  ② : ● CV2/AFM–6P
  ③ : ● CV3/AFM–6P
  ④ : ● CV4/AFM–6P
- Spec. :

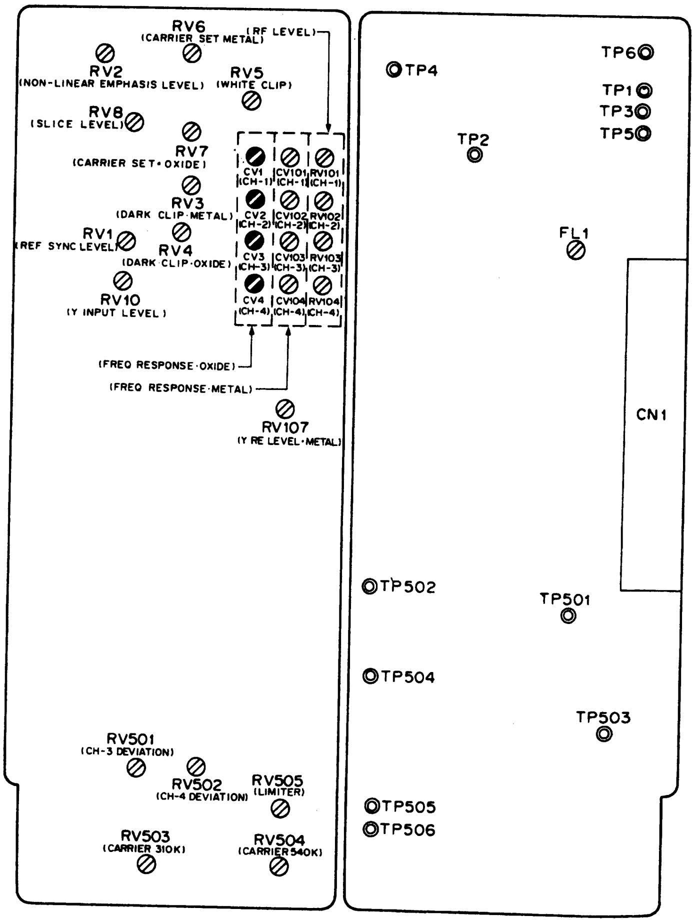
frequency	level
2 MHz	100% reference
10 MHz	90^{+5}_{-15} %

TRIG: TP7/Extension board








RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET·OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD (SOLDERING SIDE) AFM-6/P BOARD (COMPONENT SIDE)

8-5-27. Y REC Current Adjustment (Oxide)

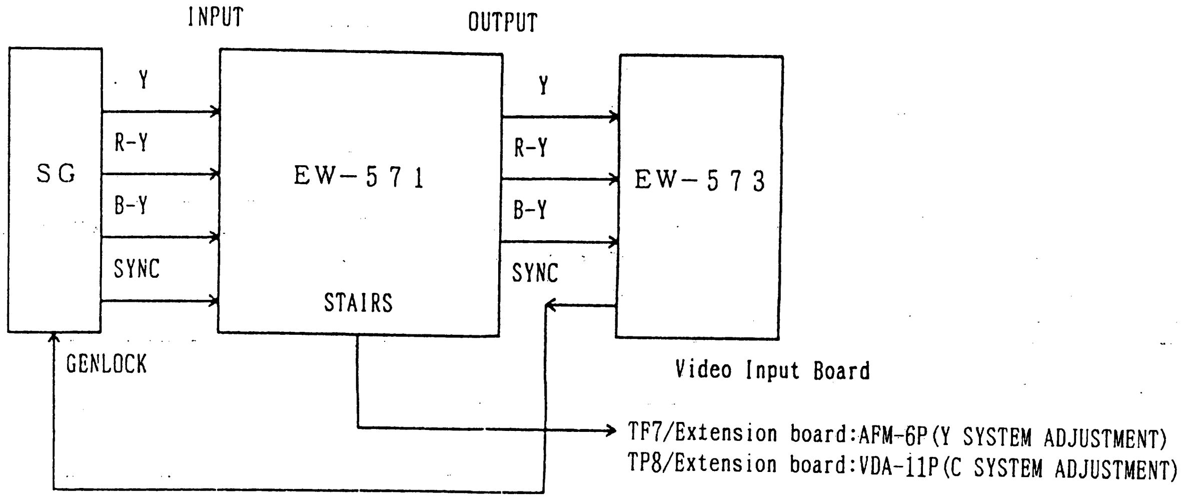
Step 1.

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Connection

REC CURRENT ADJ. TOOL


INPUT
OUTPUT
SG
Y
R-Y
B-Y
SYNC
EW-571
STAIRS
Y
R-Y
B-Y
SYNC
EW-573
GENLOCK
Video Input Board
TF7/Extension board:AFM-6P(Y SYSTEM ADJUSTMENT)
TP8/Extension board:VDA-11P(C SYSTEM ADJUSTMENT)

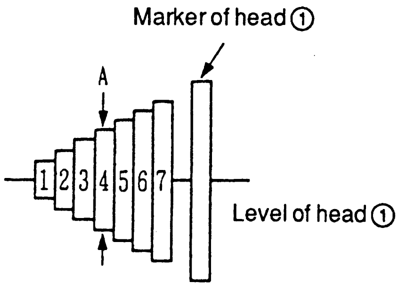
- Preparation

- Remove short-housing CNJ2 on the AFM-6P board and connect the RF OUT connector of the REC Current Adjustment Tool between TP4 on the AFM-6P board and E2 on the AFM-6P board.
- Insert the BCT-20G and put the unit into the REC PAUSE mode.
- Adjustment To II:

AUTO/M ANU → AUTO
NTSC/PAL → NTSC
Y/C → Y
METAL/OXIDE→OXIDE

- Adjustment procedures

- Test point : TP32/Extension board: AFM-6P
- Adj. point : RF LEVEL VR/REC CURRENT ADJUSTMENT TOOL
- Spec. : A = 800 ± 10mV (Fourth level)


Marker of head ①
A
1
2
3
4
5
6
7
Level of head ①

Step 2.

- Setting

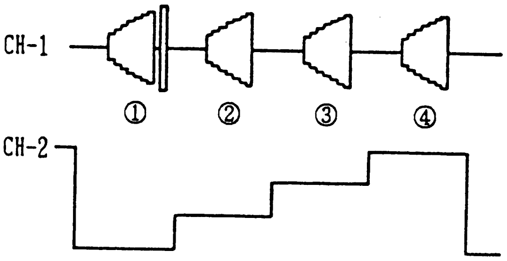
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

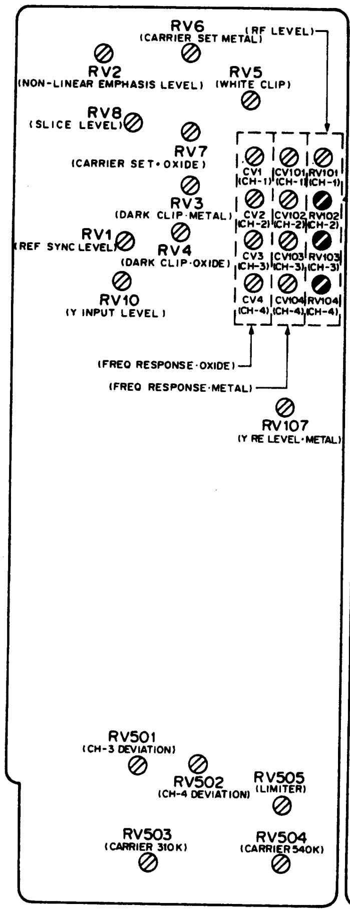
- Preparation

- Adjust so that the specified level is the same as in Step 1.
- Put the unit into the REC mode and record the signal on the tape.

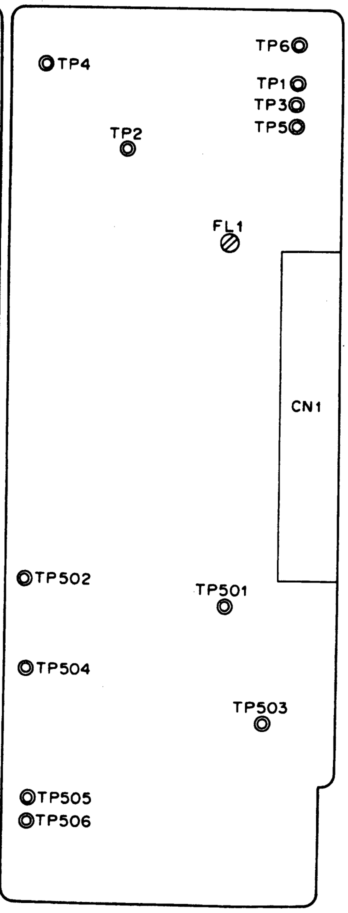
- Adjustment procedures

- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point : HEAD② : ● RV102/AFM-6P
  HEAD③ : ● RV103/AFM-6P
  HEAD④ : ● RV104/AFM-6P
- Spec. :


CH-1
①
②
③
④
CH-2


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET・OXIDE)
RV3
(DARK CLIP・METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP・OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE・OXIDE)
(FREQ RESPONSE・METAL)
RV107
(Y RE LEVEL・METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD(SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(COMPONENT SIDE)

Step 3

- Setting

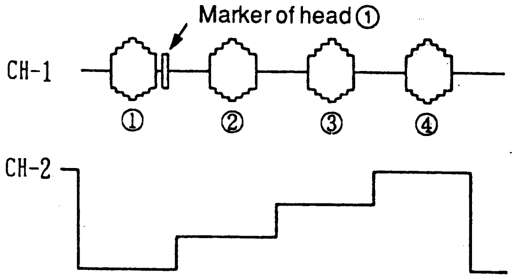
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

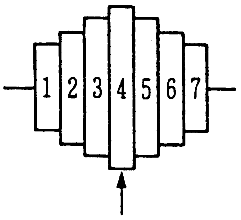
- Play back the recorded portion in step 2.
- Memorize the maximum level for every four heads (① through ④).

- Adjustment procedures

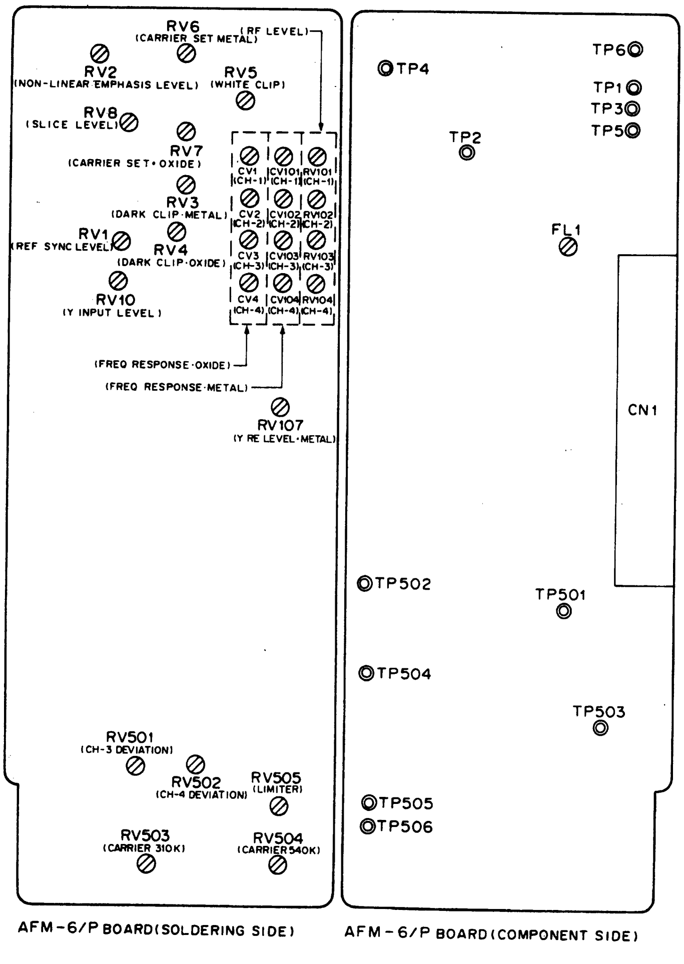
- Test point : CH-1 : TP33/Extension board :
  VP-24
  CH-2 : TP25/Extension board :
  VP-24
- Spec: :



Marker of head ①
CH-1
①
②
③
④
CH-2



Check the maximum PB RF level.
* The illustrated fourth level is maximum.



RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506
AFM-6/P BOARD(SOLDERING SIDE)
AFM-6/P BOARD(COMPONENT SIDE)

- Note

- Remove a tool between TP4 and E2 and install short-housing CNJ2.

Step 4.

- Setting

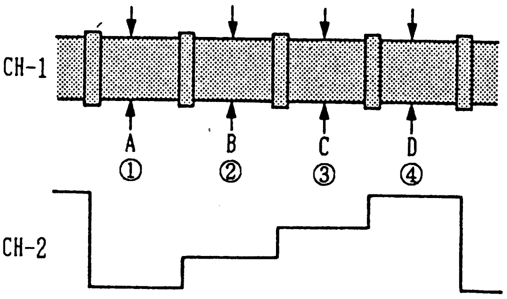
Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Preparation

- Input signal: 50% flat field
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

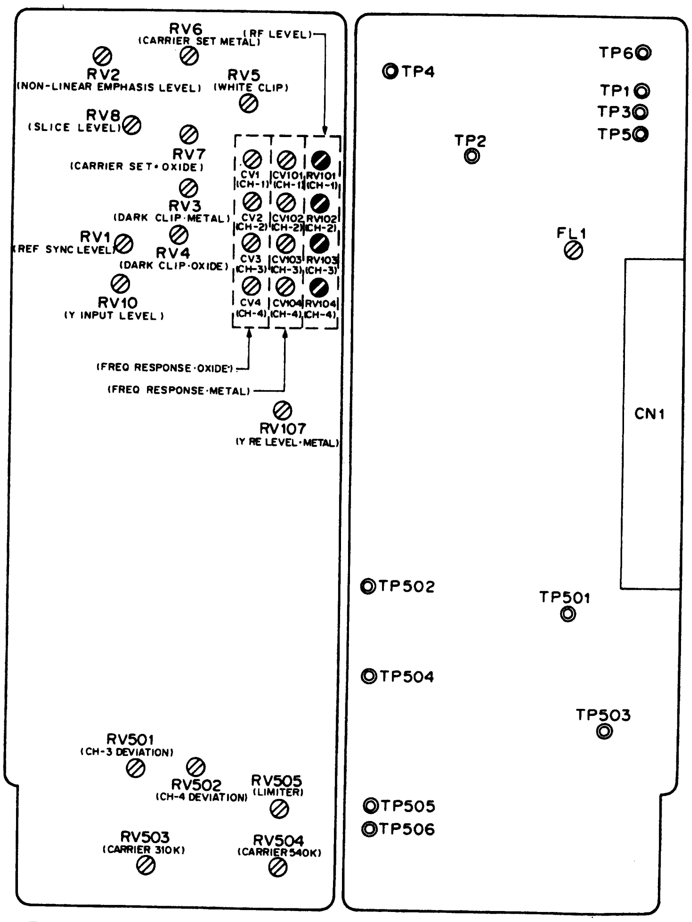
- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point : HEAD① : ● RV101/AFM-6P
  HEAD② : ● RV102/AFM-6P
  HEAD③ : ● RV103/AFM-6P
  HEAD④ : ● RV104/AFM-6P
- Spec. : Adjust the voltage so that A, B, C, and D correspond to the maximum levels memorized in Step 3.


CH-1
A
①
B
②
C
③
D
④
CH-2

[Correspondence Table]

1	2	3	4	5	6	7
630	690	750	800	865	930	980

(mVp-p)


RV6 (CARRIER SET METAL)
(RF LEVEL)
RV2 (NON-LINEAR EMPHASIS LEVEL)
RV5 (WHITE CLIP)
RV8 (SLICE LEVEL)
RV7 (CARRIER SET・OXIDE)
RV3 (DARK CLIP・METAL)
RV1 (REF SYNC LEVEL)
RV4 (DARK CLIP・OXIDE)
RV10 (Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE・OXIDE)
(FREQ RESPONSE・METAL)
RV107 (Y RE LEVEL・METAL)
RV501 (CH-3 DEVIATION)
RV502 (CH-4 DEVIATION)
RV505 (LIMITER)
RV503 (CARRIER 310K)
RV504 (CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE)   AFM-6/P BOARD(COMPONENT SIDE)

8-5-28. Y Frequency Response Check (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

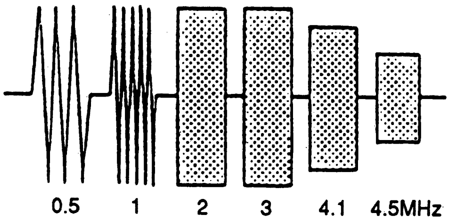
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) - (CR5-2APS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

1 MHz	100 %
2 MHz	98 %
3 MHz	90 %
4.1 MHz	73 %

Chart 1

- Adjustment procedures

CAV Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.5MHz	100% (REFERENCE)
1MHz	(100−Calibration value)±5%
2MHz	(98−Calibration value)$^{+5}_{-7.5}$%
3MHz	(90−Calibration value)$^{+5}_{-10}$%
4.1MHz	(73−Calibration value)$^{+5}_{-18}$%

Measure the levels at the center of moire.

The level difference between the CH-1 and the CH-2 should be in the 5% or the less.

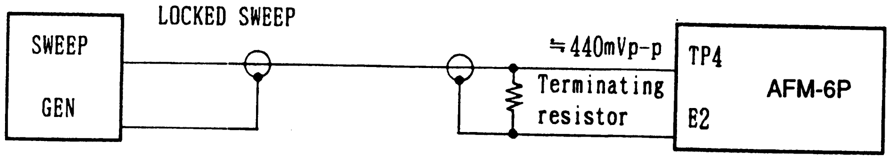
When the specification is not satisfied, re-adjust the Y recording current frequency responce adjustment (Oxide) within the specification. After the adjustment, perform the Y recording current adjustment (Oxide).

8-5-29. Y REC Current Frequency Response Adjustment (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board: AFM–6P board

- Connection


LOCKED SWEEP
SWEEP
GEN
≒440mVp-p
Terminating
resistor
TP4
E2
AFM-6P

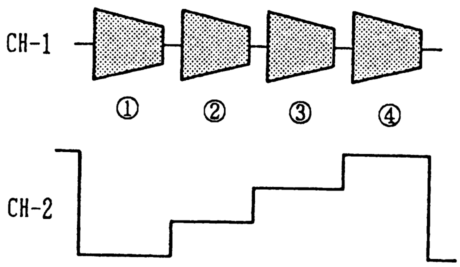
- Preparation

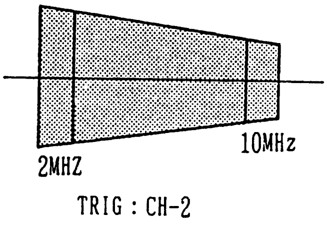
- Remove short-housing CNJ2 on the AFM-6P board, connect the Sweep Signal Generator between TP4 on the AFM-6P board and E2 on the AFM-6 board, and supply a locked sweep signal.
- Insert the BCT-20M and put the unit into the REC mode.
- After adjustment is completed, install short-housing CNJ2.

- Adjustment procedures

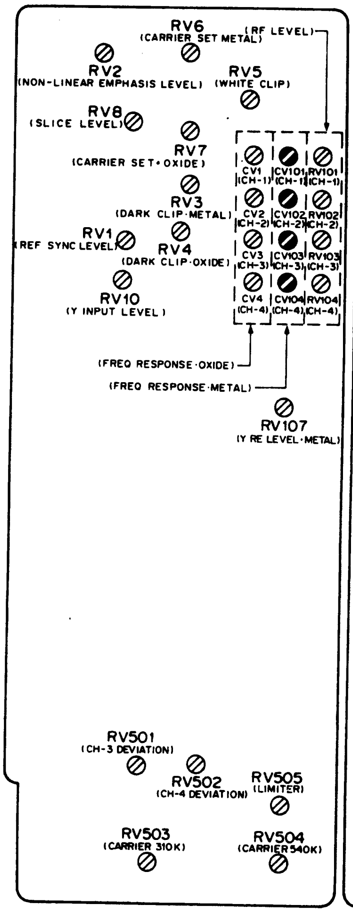
- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point :① ● CV101/AFM-6P
  ② ● CV102/AFM-6P
  ③ ● CV103/AFM-6P
  ④ ● CV104/AFM-6P
- Spec. :

frequency	level
2 MHz	100% reference
10 MHz	95^{+5}_{-10} %

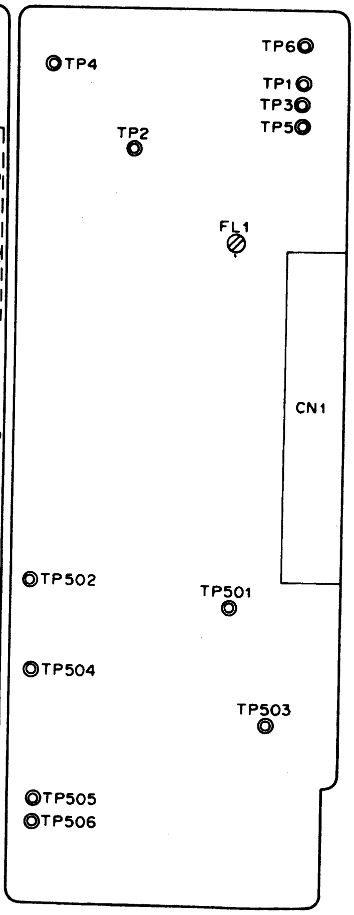

CH-1
①
②
③
④
CH-2



TRIG : CH-2


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET・OXIDE)
RV3
(DARK CLIP・METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP・OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE・OXIDE)
(FREQ RESPONSE・METAL)
RV107
(Y RE LEVEL・METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)

AFM-6/P BOARD (SOLDERING SIDE)


TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD (COMPONENT SIDE)

8-5-30. Y REC Current Adjustment (Metal)

- Setting

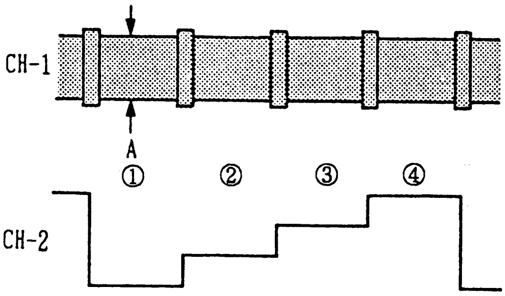
Equipment: Dualtrace Oscilloscope	Board: AFM-6P board

- Preparation

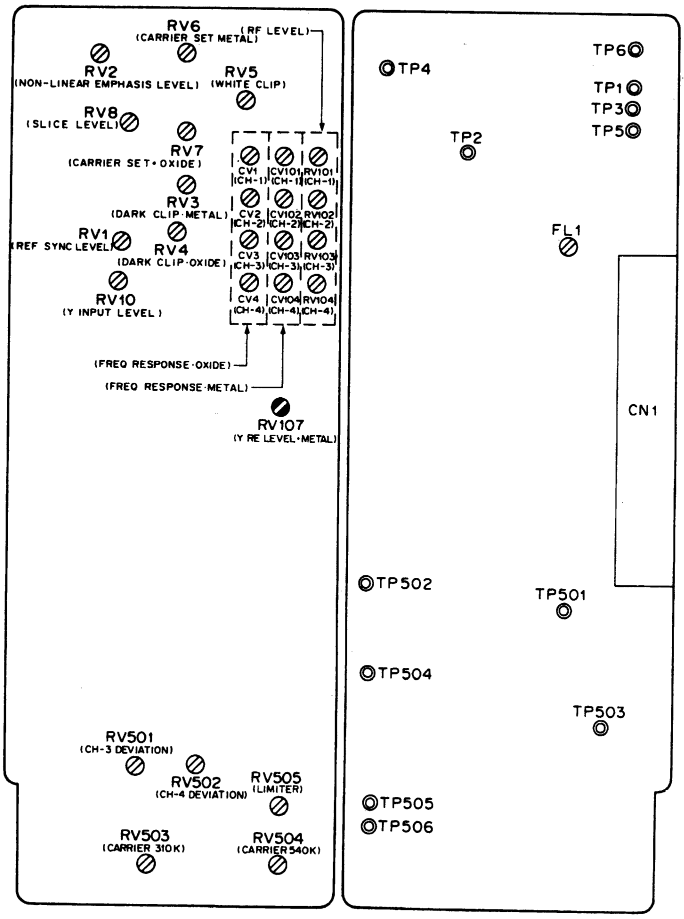
- Input signal: 50% flat field
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : CH-1 : TP32/Extension board
  CH-2 : TP7/Extension board
- Adj. point : ⊘ RV107/AFM-6P
- Spec. : Adjust so that A is two times as high as the level of head ① which is set in Step 4 of Sec. 8-5-27. Y REC Current Adjustment (Oxide).


CH-1
A
①
②
③
④
CH-2

The each level of the head① through④ should be less than 1.6V.


RV6
(CARRIER SET METAL)
(RF LEVEL)
RV2
(NON-LINEAR EMPHASIS LEVEL)
RV5
(WHITE CLIP)
RV8
(SLICE LEVEL)
RV7
(CARRIER SET • OXIDE)
RV3
(DARK CLIP·METAL)
RV1
(REF SYNC LEVEL)
RV4
(DARK CLIP·OXIDE)
RV10
(Y INPUT LEVEL)
CV1 (CH-1)
CV101 (CH-1)
RV101 (CH-1)
CV2 (CH-2)
CV102 (CH-2)
RV102 (CH-2)
CV3 (CH-3)
CV103 (CH-3)
RV103 (CH-3)
CV4 (CH-4)
CV104 (CH-4)
RV104 (CH-4)
(FREQ RESPONSE·OXIDE)
(FREQ RESPONSE·METAL)
RV107
(Y RE LEVEL·METAL)
RV501
(CH-3 DEVIATION)
RV502
(CH-4 DEVIATION)
RV505
(LIMITER)
RV503
(CARRIER 310K)
RV504
(CARRIER 540K)
TP4
TP6
TP1
TP3
TP5
TP2
FL1
CN1
TP502
TP501
TP504
TP503
TP505
TP506

AFM-6/P BOARD(SOLDERING SIDE)   AFM-6/P BOARD(COMPONENT SIDE)

8-5-31. Y Frequency Response Check (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

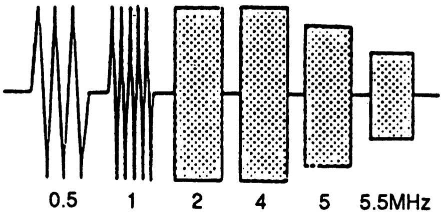
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) - (CR5-1BPS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

1 MHz	100 %
2 MHz	100 %
4 MHz	100 %
5 MHz	100 %
5.5 MHz	80 %

Chart 1

- Adjustment procedures

CAV Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.5MHz	100% (REFERENCE)
1MHz	(100-Calibration value) ±5%
2MHz	(100-Calibration value) ±5%
4MHz	(100-Calibration value)$^{+2.5}_{-7.5}$%
5MHz	(100-Calibration value)$^{+5}_{-7.5}$%
5.5MHz	(85-Calibration value) $^{+10}_{-15}$%

Measure the levels at the center of moire.

The level difference between the CH-1 and the CH-2 should be in the 5% or the less.

When the specification is not satisfied, re-adjust the Y recording current frequency responce adjustment (Metal) within the specification. After the adjustment, perform the Y recording current adjustment (Metal).

8-5-32. C REC Current Tentative Adjustment (Oxide)

- Setting

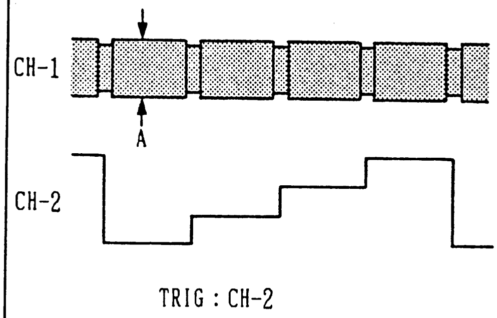
Equipment: Dualtrace Oscilloscope	Board: VDA–11P board

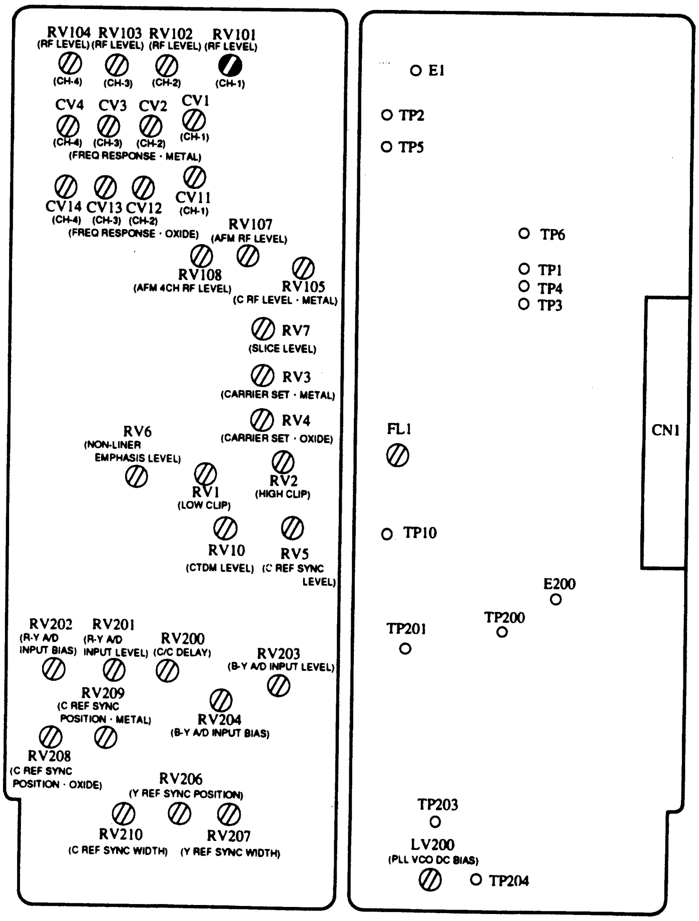
- Preparation

- Input signal: 0% flat field
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : ● RV101 (CH-1 RF LEVEL)
  /VDA-11P
- Spec. : A = 400±10mV


CH-1
A
CH-2
TRIG : CH-2


RV104 RV103 RV102 RV101
(RF LEVEL) (RF LEVEL) (RF LEVEL) (RF LEVEL)
(CH-4) (CH-3) (CH-2) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · METAL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · OXIDE)
RV107
(AFM RF LEVEL)
RV108
(AFM 4CH RF LEVEL)
RV105
(C RF LEVEL · METAL)
RV7
(SLICE LEVEL)
RV3
(CARRIER SET · METAL)
RV4
(CARRIER SET · OXIDE)
RV6
(NON-LINER EMPHASIS LEVEL)
RV1
(LOW CLIP)
RV2
(HIGH CLIP)
RV10
(CTDM LEVEL)
RV5
(C REF SYNC LEVEL)
RV202
(R-Y A/D INPUT BIAS)
RV201
(R-Y A/D INPUT LEVEL)
RV200
(C/C DELAY)
RV203
(B-Y A/D INPUT LEVEL)
RV209
(C REF SYNC POSITION · METAL)
RV204
(B-Y A/D INPUT BIAS)
RV208
(C REF SYNC POSITION · OXIDE)
RV206
(Y REF SYNC POSITION)
RV210
(C REF SYNC WIDTH)
RV207
(Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200
(PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE)

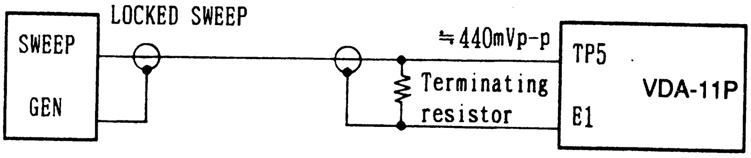
VDA-11/P BOARD(COMPONENT SIDE)

8-5-33. C REC Current Frequency Response Adjustment (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA–11P board

- Connection


SWEEP
GEN
LOCKED SWEEP
≒440mVp-p
Terminating
resistor
TP5
E1
VDA-11P

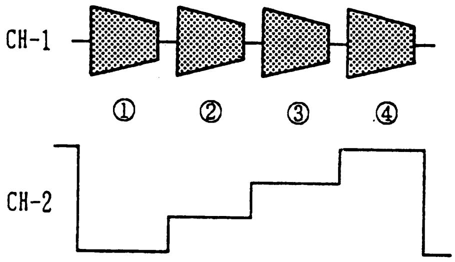
- Preparation

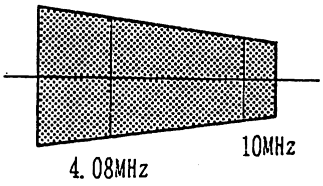
- Remove short-housing CNJ2 on the VDA-11P board, connect the Sweep Signal Generator between TP5 on the VDA-11P board and E1 on the VDA-11P board, and supply a locked sweep signal.
- Insert the BCT-20G and put the unit into the REC PAUSE mode.

- Adjustment procedures

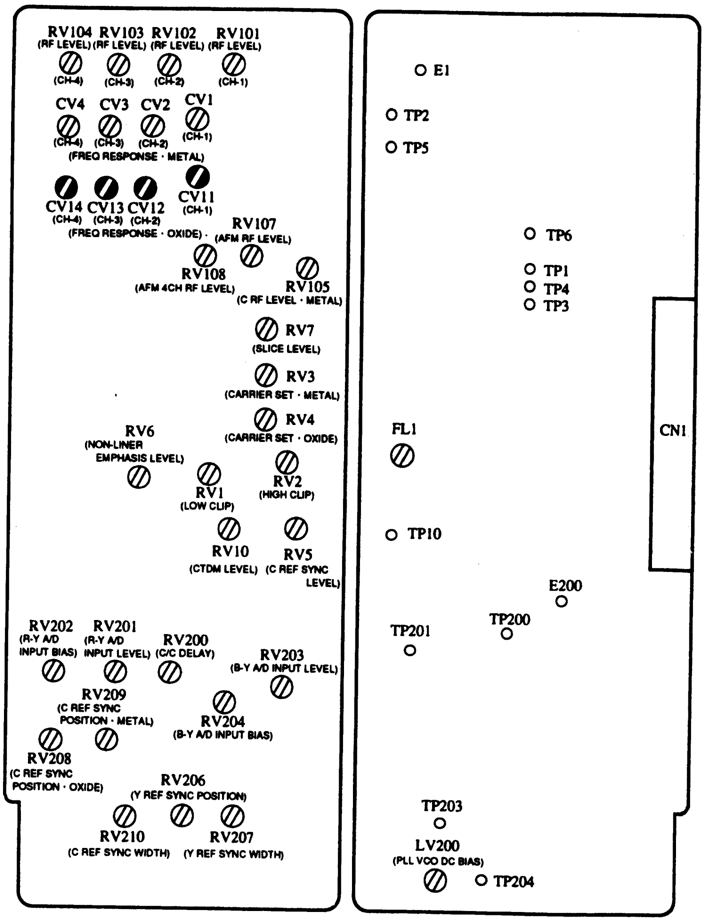
- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : CH-1 : ⊘ CV11/VDA-11P
  CH-2 : ⊘ CV12/VDA-11P
  CH-3 : ⊘ CV13/VDA-11P
  CH-4 : ⊘ CV14/VDA-11P
- Spec. :

frequency	level
3.93 MHz	100% reference
10 MHz	60 ±10%


CH-1
①
②
③
④
CH-2


4. 08MHz
10MHz

TRIG : TP8/Extension board


RV104 RV103 RV102 RV101
(RF LEVEL) (RF LEVEL) (RF LEVEL) (RF LEVEL)
(CH-4) (CH-3) (CH-2) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · METAL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · OXIDE) ·
RV107
(AFM RF LEVEL)
RV108
(AFM 4CH RF LEVEL)
RV105
(C RF LEVEL · METAL)
RV7
(SLICE LEVEL)
RV3
(CARRIER SET · METAL)
RV4
(CARRIER SET · OXIDE)
RV6
(NON-LINER EMPHASIS LEVEL)
RV1
(LOW CLIP)
RV2
(HIGH CLIP)
RV10
(CTDM LEVEL)
RV5
(C REF SYNC LEVEL)
RV202
(R-Y A/D INPUT BIAS)
RV201
(R-Y A/D INPUT LEVEL)
RV200
(C/C DELAY)
RV203
(B-Y A/D INPUT LEVEL)
RV209
(C REF SYNC POSITION · METAL)
RV204
(B-Y A/D INPUT BIAS)
RV208
(C REF SYNC POSITION · OXIDE)
RV206
(Y REF SYNC POSITION)
RV210
(C REF SYNC WIDTH)
RV207
(Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200
(PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE) VDA-11/P BOARD(COMPONENT SIDE)

- Note

- After adjustment is completed, install short-housing CNJ2.

8-5-34. C REC Current Adjustment (Oxide)

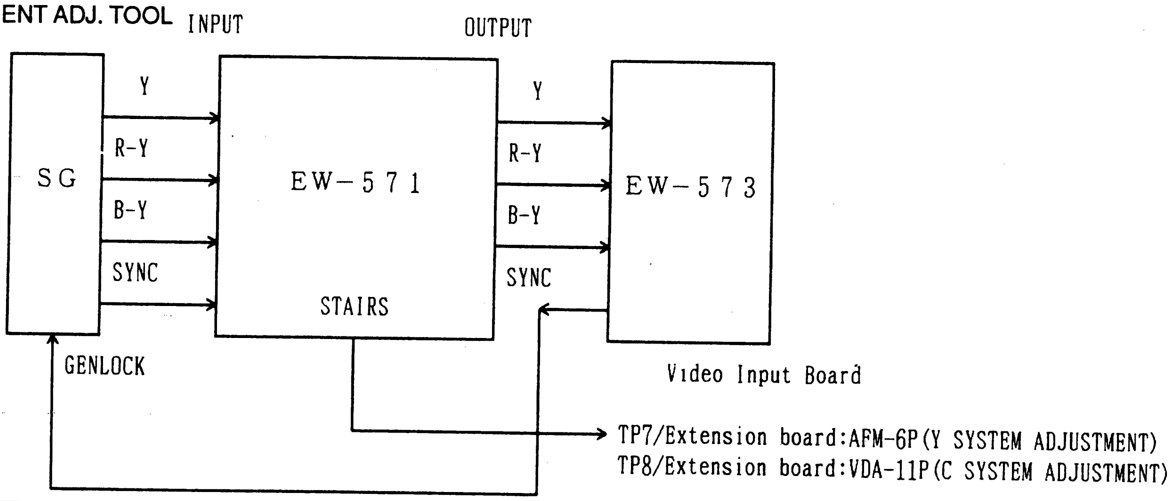
Step 1.

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Connection

REC CURRENT ADJ. TOOL

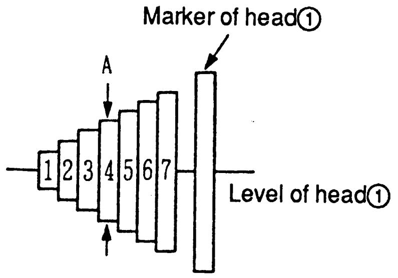

INPUT
OUTPUT
SG
Y
R-Y
B-Y
SYNC
EW-571
STAIRS
Y
R-Y
B-Y
SYNC
EW-573
GENLOCK
Video Input Board
TP7/Extension board:AFM-6P(Y SYSTEM ADJUSTMENT)
TP8/Extension board:VDA-11P(C SYSTEM ADJUSTMENT)

- Preparation

- Remove short-housing CNJ2 on the VDA-11P board and connect the RF OUT connector of the REC Current Adjustment Tool between TP5 on the VDA-11P board and E1 on the VDA-11P board.
- Insert the BCT-20K and put the unit into the REC PAUSE mode.
- Adjustment:
  AUTO/MANU→AUTO
  NTSC/PAL→NTSC
  Y/C→C
  METAL/OXIDE→OXIDE

- Adjustment procedures

- Test point : TP46/Extension board
- Adj. point : RF LEVEL VR/REC Current Adjustment Tool
- Spec. : A = 400±10mV (Fourth level)


Marker of head①
A
1
2
3
4
5
6
7
Level of head①

Step 2.

- Setting

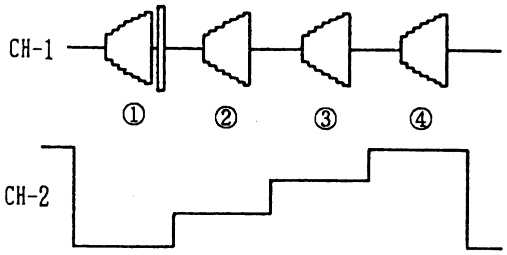
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

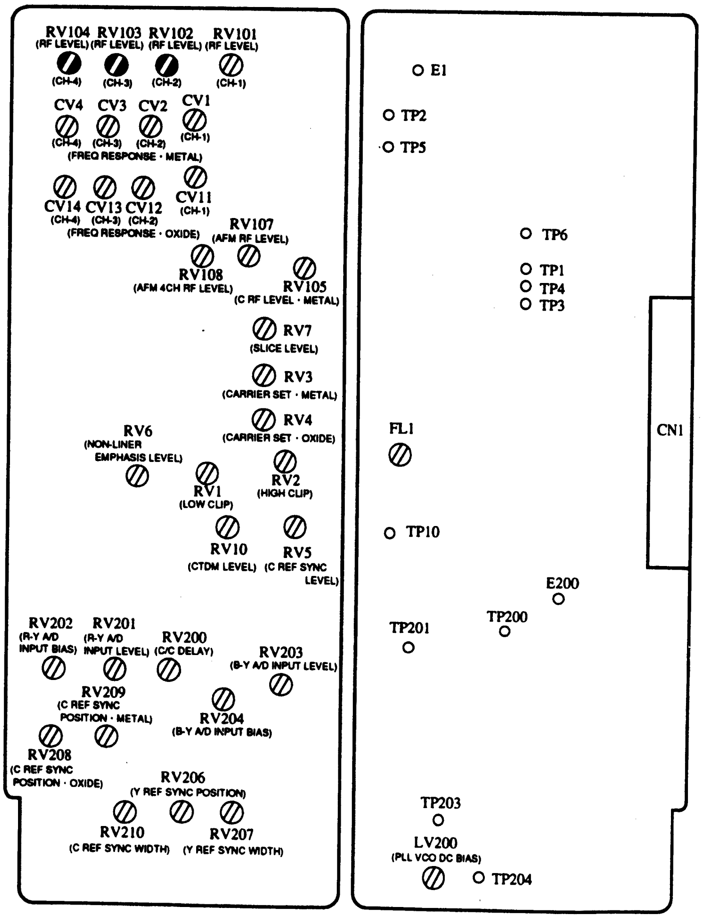
- Preparation

- Adjust so that the specified level is the same as in Step 1.
- Put the unit into the REC mode and record the signal in the tape.

- Adjustment procedures

- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : HEAD② : ⊘ RV102/VDA-11P
  HEAD③ : ⊘ RV103/VDA-11P
  HEAD④ : ⊘ RV104/VDA-11P


CH-1
①
②
③
④
CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4) CV3 (CH-3) CV2 (CH-2) CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4) CV13 (CH-3) CV12 (CH-2) CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE)

VDA-11/P BOARD(COMPONENT SIDE)

Step 3.

- Setting

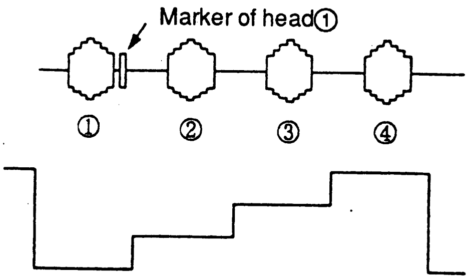
Equipment: Dualtrace Oscilloscope	Board: VP–24P board

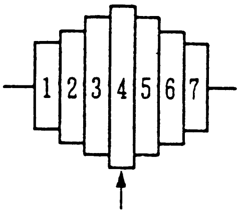
- Preparation

- Play back the recorded portion in Step 2.
- Memorize the maximum level for every four heads (① through ④)

- Adjustment procedures

- Test point : CH-1 : TP31/Extension board: VP-24P
  CH-2 : TP25/Extension board: VP-24P
- Spec. :





Check the maximum PB RF level.
* The illustrated fourth level is maximum.

- Note

- Remove the tool between TP5 and E1 and install short-housing CNJ2.

Step 4.

- Setting

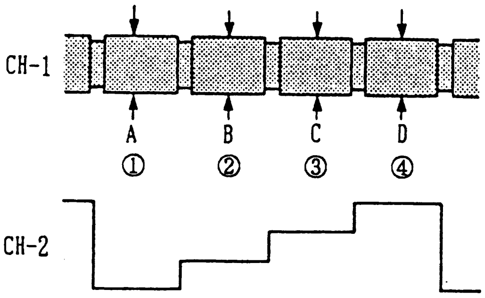
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

- Input signal: 0% flat field
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

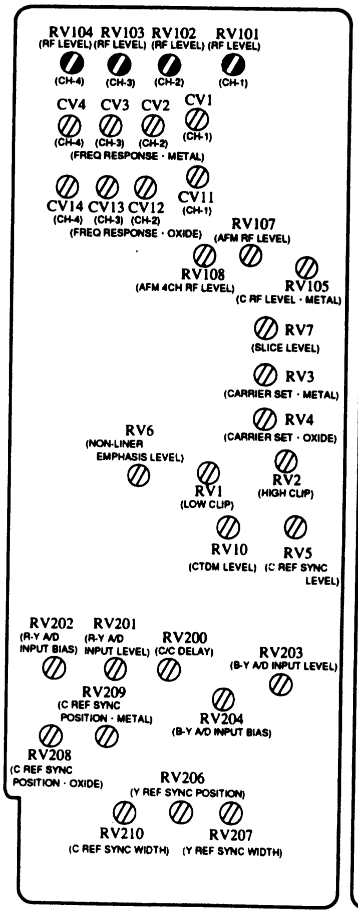
- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : HEAD① : ⊘ RV101/VDA-11P
  HEAD② : ⊘ RV102/VDA-11P
  HEAD③ : ⊘ RV103/VDA-11P
  HEAD④ : ⊘ RV104/VDA-11P
- Spec. : Adjust the voltage so that A,B, C, and D correspond to the maximum levels memorized in Step 3.


CH-1
A
B
C
D
①
②
③
④
CH-2

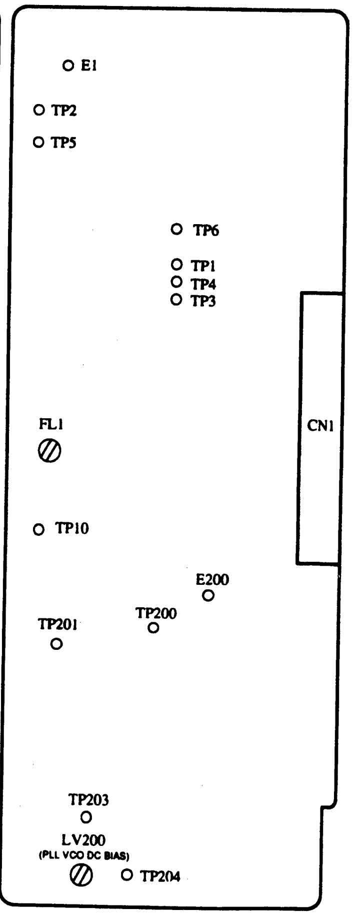
[Correspondence Table]

1	2	3	4	5	6	7
310	340	370	400	430	475	500

(mVp-p)


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-35. C Frequency Response Check (Oxide)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

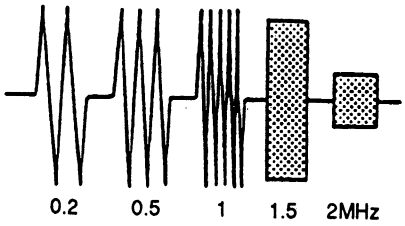
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) − (CR5-2BPS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

0.5 MHz	100 %
1 MHz	100 %
1.5 MHz	85 %

Chart 1

- Adjustment procedures

R-Y OUT/BVW-75P (or equivalent)
B-Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.2MHz	100% (REFERENCE)
0.5MHz	(100−Calibration value) ±5%
1MHz	(100−Calibration value) ±5%
1.5MHz	(85−Calibration value)$^{+5}_{-15}$ %

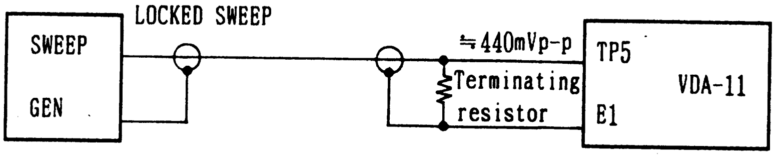
- The level difference between the CH-1 and the CH-2 should be in the 5% or the less.
- When the specification is not satisfied, re-adjust the C recording current frequency response adjustment (Oxide) with the specification. After the adjustment, perform the C recording current adjustment (Oxide).

8-5-36. C REC Current Frequency Response Adjustment (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Connection

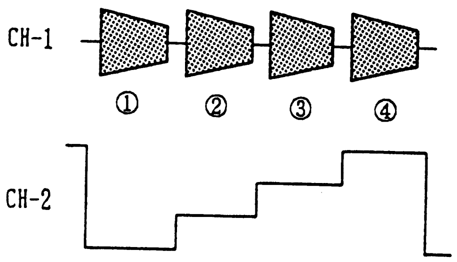

LOCKED SWEEP
SWEEP
GEN
≒440mVp-p
Terminating
resistor
TP5
E1
VDA-11

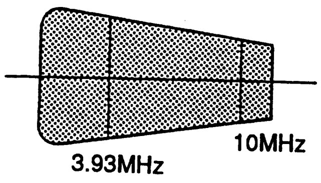
- Preparation

- Remove short-housing CNJ2 on the VDA-11P board, connect the Sweep Signal Generator between TP5 on the VDA-11P board and E1 on the VDA-11P board, and supply a locked sweep signal.
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

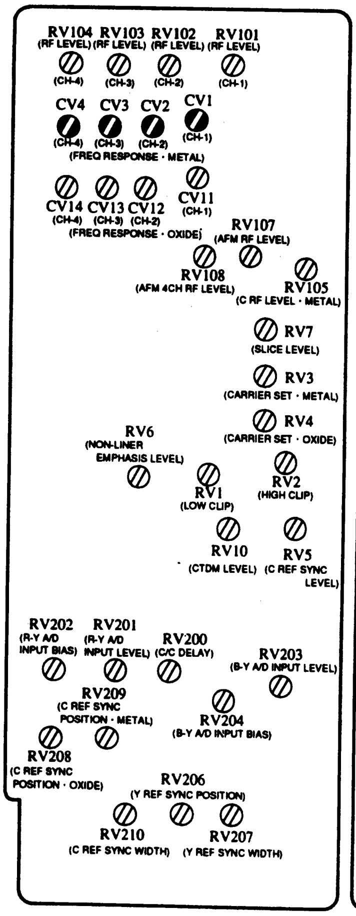
- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : ① : ⊘ CV1/VDA-11P
  ② : ⊘ CV2/VDA-11P
  ③ : ⊘ CV3/VDA-11P
  ④ : ⊘ CV4/VDA-11P
- Spec. :


CH-1
①
②
③
④
CH-2

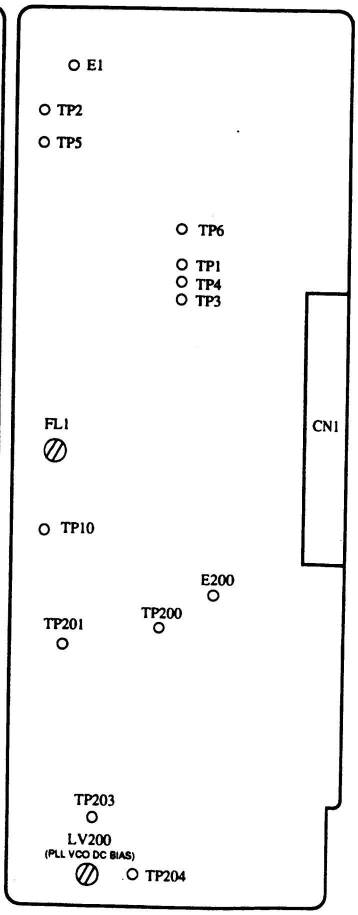

3.93MHz
10MHz

frequency	level
3.93 MHz	100% reference
10 MHz	65 ±10%

TRIG : CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP201
TP200
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

- Note

- After adjustment is completed, install short-housing CNJ2.

8-5-37. C REC Current Adjustment (Metal)

- Setting

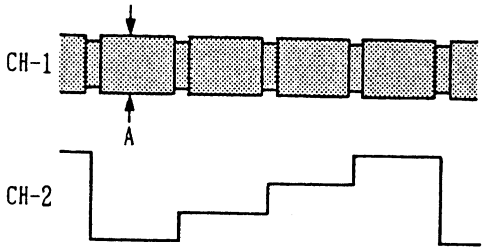
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

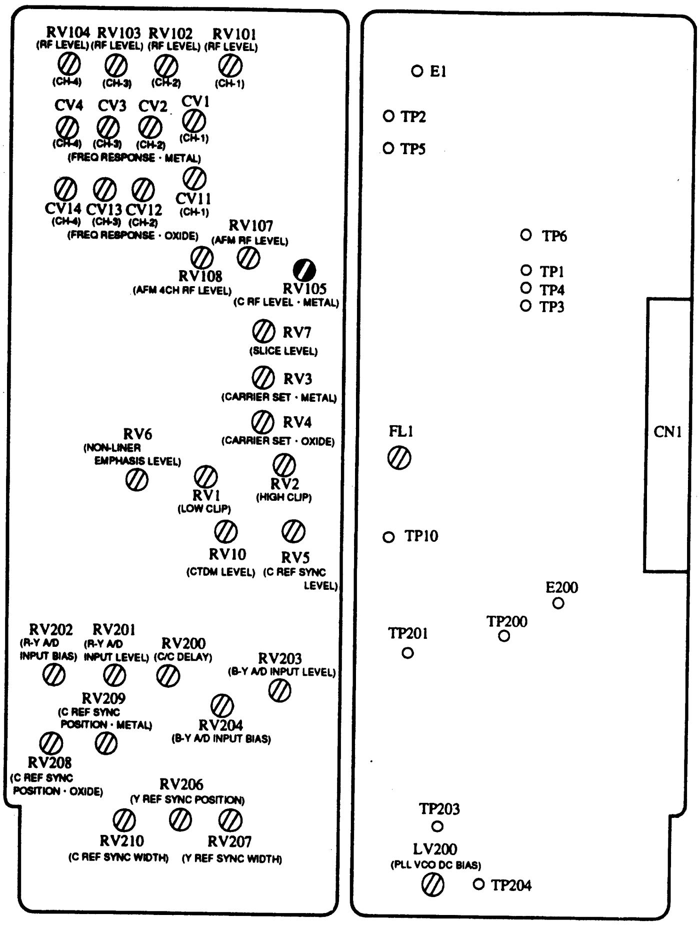
- Input signal: 0% flat field
- Connect a tantalum capacitor (1 to 10μF/16V) between TP35 and TP1, TP36 and TP2 on the Extension board. (TP1 and TP2 negative).
- Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures

- Test point : CH-1 : TP46/Extension board
  CH-2 : TP8/Extension board
- Adj. point : ⊘ RV105/VDA-11P
- Spec. : Adjust so that A is one point eight times as high as the level of head ① which is set in Step 4 of Sec. 8-5-32 C REC Current Adjustment (Oxide).



Note: The each level of the head ① through ④ should be less than 1.0V.


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE) VDA-11/P BOARD(COMPONENT SIDE)

8-5-38. C Frequency Response Check (Metal)

- Setting

Equipment: Dualtrace Oscilloscope	Board:

- Preparation

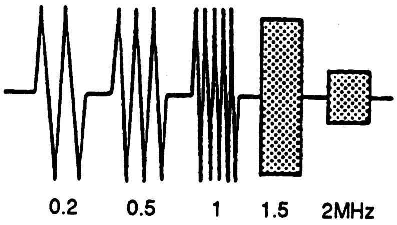
- Calcurate the calibration value on the standard player (equivalent to BVW-75P).
  Calibration Value = (Chart 1) - (CR5-1BPS playback level)
- Playback the randomly recorded portions using the standard player BVW-400P.

1 MHz	100 %
2 MHz	100 %
4 MHz	100 %

Chart 1

- Adjustment procedures

R-Y OUT/BVW-75P (or equivalent)
B-Y OUT/BVW-75P (or equivalent)



FREQUENCY	LEVEL
0.2MHz	100% (REFERENCE)
0.5MHz	(100-Calibration value) ±5%
1MHz	(100-Calibration value) ±5%
1.5MHz	(85-Calibration value)$^{+5}_{-15}$ %

- The level difference between the CH-1 and the CH-2 should be in the 5% or the less.
- When the specification is not satisfied, re-adjust the C recording current frequency response adjustment (Metal) within the specification. after the adjustment, perform the C recording current adjustment (Metal).

8-5-39. C REF Sync Position Tentative Adjustment (Metal)

- Setting

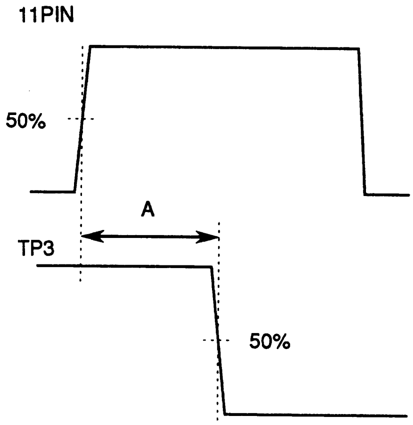
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

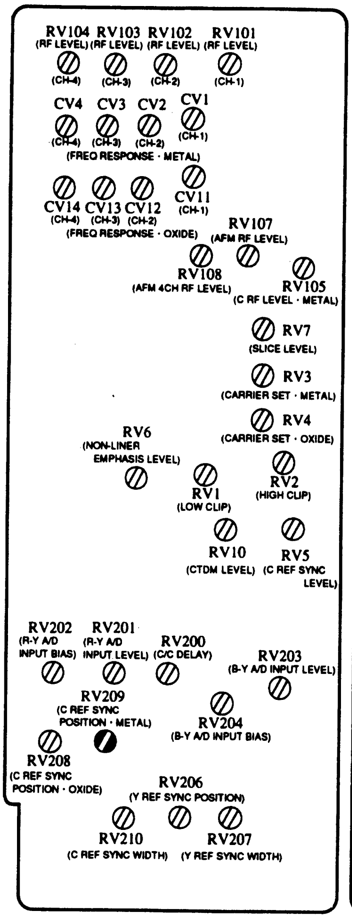
- Preparation

  - built-in color-bar
  - Insert the BCT-20M and put the unit into the REC mode.

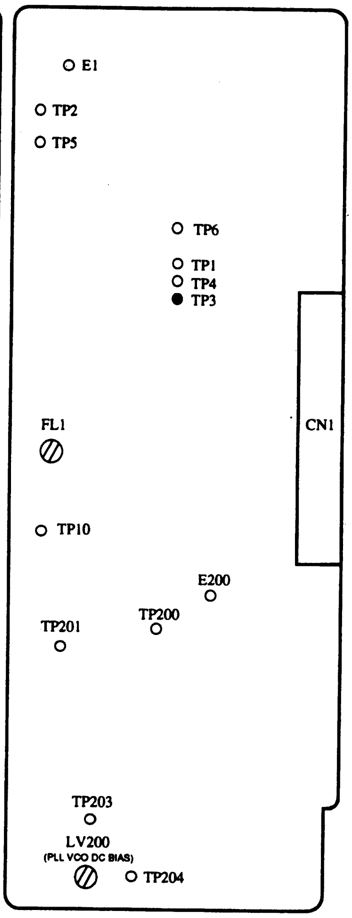
- Adjustment procedures

  - Test point : TP11/Extension board
    TP3/VDA-11P
  - Adj. point : ⊘RV209 (C REF SYNC POSITION METAL)/VDA-11P
  - Spec. : A = 670 ± 10 nsec


11PIN
50%
A
TP3
50%


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-40. C REF Sync Position Tentative Adjustment (Oxide)

- Setting

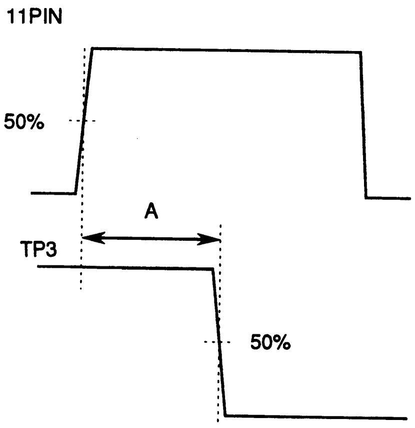
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

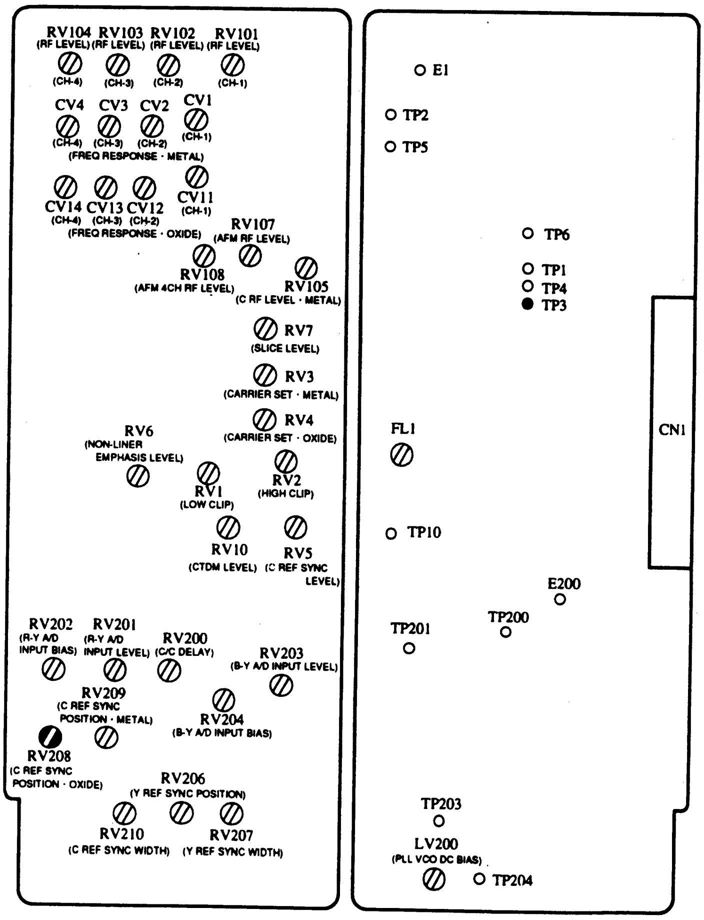
- Preparation

- built-in color-bar
- Insert the BCT-20G and put the unit into the REC mode.

- Adjustment procedures

- Test point : TP11/Extension board
  TP3/VDA-11P
- Adj. point : ⊘RV208 (C REF SYNC POSITION OXIDE)/VDA-11P
- Spec. : A = 670 ± 10 nsec


11PIN
50%
A
TP3
50%


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP201
TP200
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE) VDA-11/P BOARD(COMPONENT SIDE)

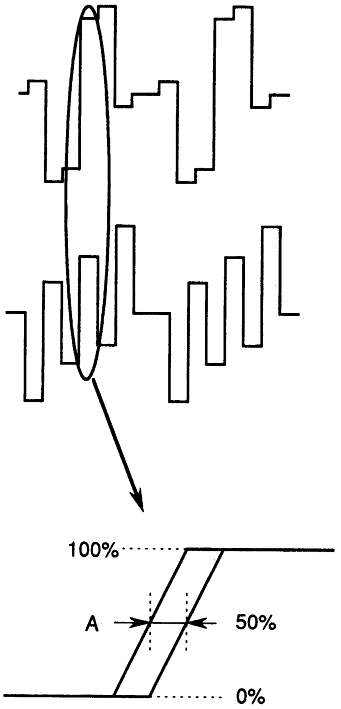
8-5-41. C/C Delay Adjustment

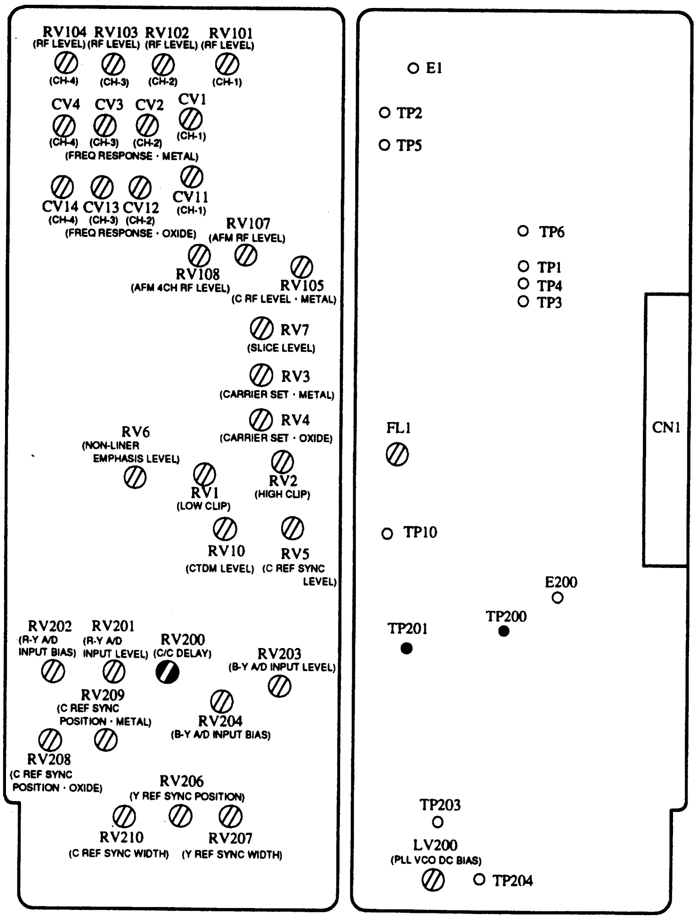
- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation
  - built-in color-bar
  - Insert the BCT-20M and put the unit into the REC mode.

- Adjustment procedures
  - Test point : TP200/VDA-11P
    TP201/VDA-11P
  - Adj. point : ⊘RV200 (C/C DELAY)/VDA-11P
  - Spec. : A = 0 ± 5 nsec




RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
CN1
FL1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE)   VDA-11/P BOARD(COMPONENT SIDE)

8-5-42. Composite Y/C Delay Adjustment (Metal)

Step 1.

- Note

• A standard VTR (BVW-75 or the equivalent) which is adjusted to the specified value is used in this adjustment.

- Setting

Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

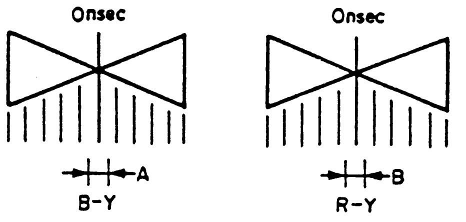
- Preparation

- Input signal: BOWTIE (TSG-300)
- Insert the BCT-20M and put the unit into the REC mode.
- Play back the recorded tape using a standard VTR player.
- Set the Y/C DELAY control of a standard VTR player to PRESET.

- Adjustment procedures

- Test point : CAV Y, CAV R–Y, CAV B–Y } OUT/Standard VTR (terminated by 75 ohms)
- Spec. : A , B = ±10nsec

BOWTIE



1. Check that the cross point of waveform is between A and B.
2. If the specification is not satisfied, check that the chroma signal is advanced or delayed.

Step 2.

- Setting

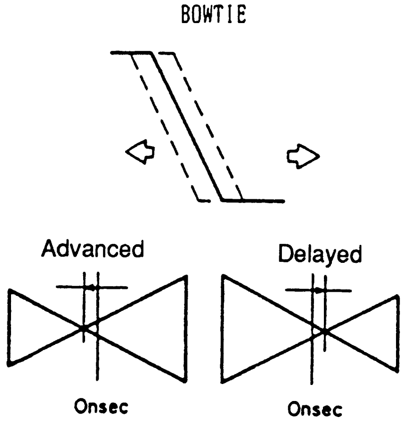
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

• Insert the BCT-20M and put the unit into the REC mode.

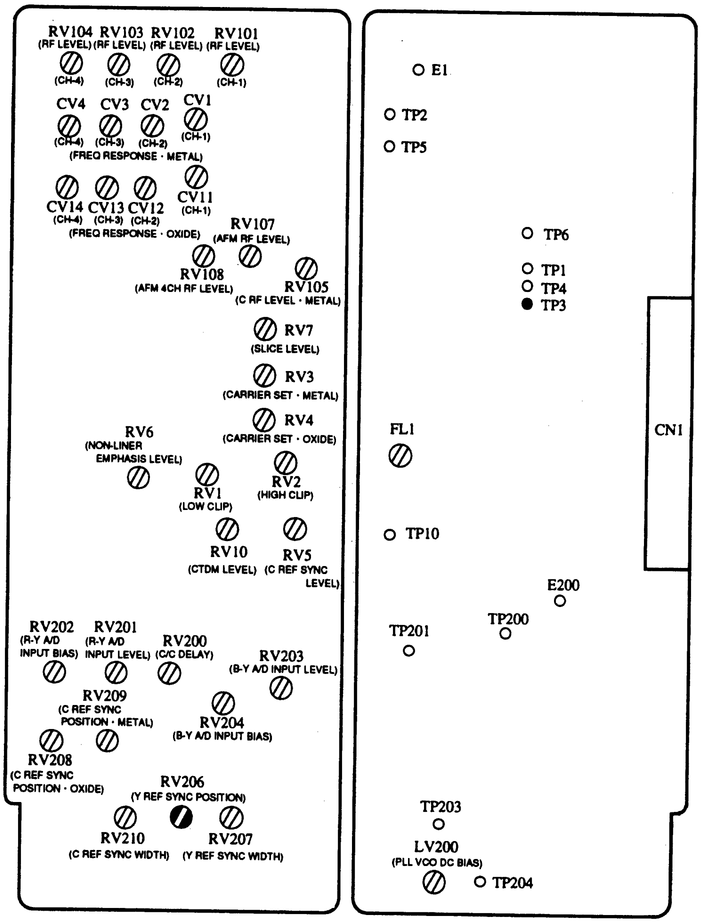
- Adjustment procedures

- Test point : TP3/VDA-11P
- Adj. point : ⊘RV206 /VDA-11P(C REF SYNC POSITION)
- Spec. :


BOWTIE
Advanced
Delayed
Onsec
Onsec

TRIG:TP17/Extension board

1. When the chroma signal is delayed, correct the REF Sync signal in the right direction.
2. When the chroma signal is advanced, correct the REF Sync signal in the left direction.
3. Adjust Steps 1 and 2 repeatedly until the specification is satisfied.


RV104 RV103 RV102 RV101
(RF LEVEL) (RF LEVEL) (RF LEVEL) (RF LEVEL)
(CH-4) (CH-3) (CH-2) (CH-1)
CV4 CV3 CV2 CV1
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · METAL)
CV14 CV13 CV12 CV11
(CH-4) (CH-3) (CH-2) (CH-1)
(FREQ RESPONSE · OXIDE)
RV107
(AFM RF LEVEL)
RV108
(AFM 4CH RF LEVEL)
RV105
(C RF LEVEL · METAL)
RV7
(SLICE LEVEL)
RV3
(CARRIER SET · METAL)
RV4
(CARRIER SET · OXIDE)
RV6
(NON-LINER EMPHASIS LEVEL)
RV1
(LOW CLIP)
RV2
(HIGH CLIP)
RV10
(CTDM LEVEL)
RV5
(C REF SYNC LEVEL)
RV202
(R-Y A/D INPUT BIAS)
RV201
(R-Y A/D INPUT LEVEL)
RV200
(C/C DELAY)
RV203
(B-Y A/D INPUT LEVEL)
RV209
(C REF SYNC POSITION · METAL)
RV204
(B-Y A/D INPUT BIAS)
RV208
(C REF SYNC POSITION · OXIDE)
RV206
(Y REF SYNC POSITION)
RV210
(C REF SYNC WIDTH)
RV207
(Y REF SYNC WIDTH)
E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200
(PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(SOLDERING SIDE) VDA-11/P BOARD(COMPONENT SIDE)

8-5-43. Composite Y/C Delay Adjustment (Oxide)

Step 1.

- Setting

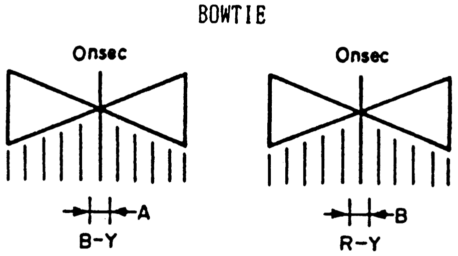
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

- Input signal: MOD pulse and bar
- Insert the BCT-20G and put the unit into the REC mode.
- Play back the recorded tape using a standard VTR.
- Set the Y/C DELAY control of a standard VTR to PRESET.

- Adjustment procedures

- Test point : CAV Y } OUT/Standard VTR
  CAV R–Y } (terminated by
  CAV B–Y } 75 ohms)
- Spec. : A , B = ±10nsec



1. Check that the cross point of waveform is between A and B.
2. If the specification is not satisfied, check that the chroma signal is advanced or delayed.

- Note

- A standard VTR (BVW-75P or the equivalent) which is adjusted to the specified value is used in this adjustment.

Step 2

- Setting

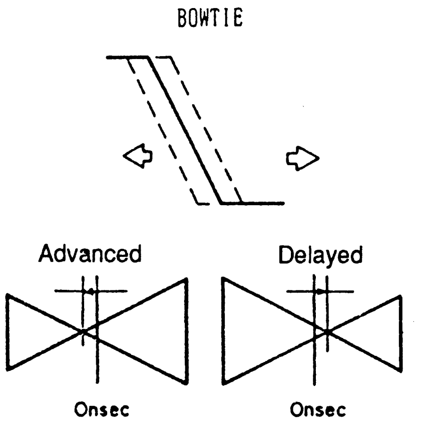
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

- Preparation

• Insert the BCT-20G and put the unit into the REC mode.

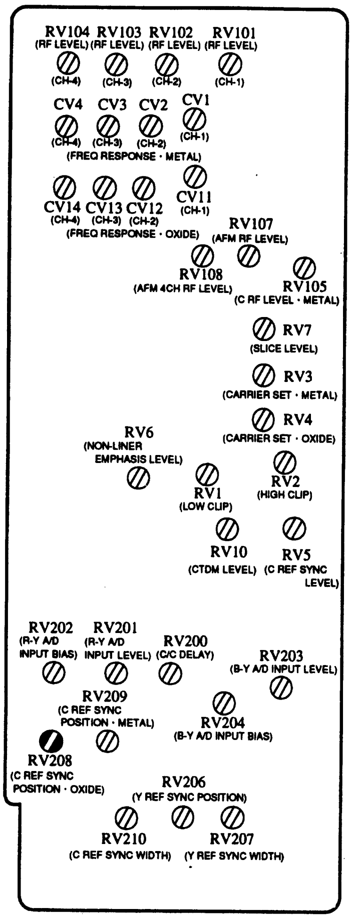
- Adjustment procedures

- Test point : TP3/VDA-11P
- Adj. point : ●RV208 /VDA-11P (C REF SYNC POSITION OXIDE)
- Spec. :

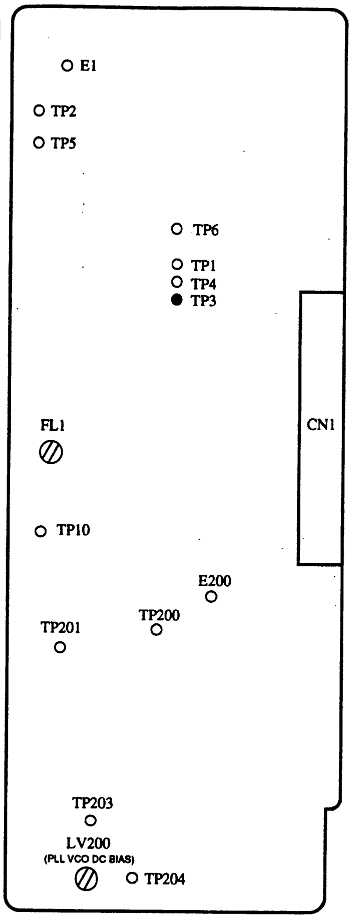

BOWTIE
Advanced
Delayed
Onsec
Onsec

TRIG:TP17/Extension board

1. When the chroma signal is delayed, correct the REF Sync signal in the right direction.
2. When the chroma signal is advanced, correct the REF Sync signal in the left direction.
3. Adjust Steps 1 and 2 repeatedly until the specification is satisfied.


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-44. AFM-RF Balance Adjustment

- Setting

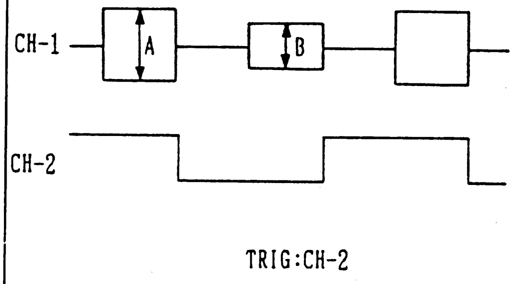
Equipment: Dualtrace Oscilloscope	Board: VDA-11P board

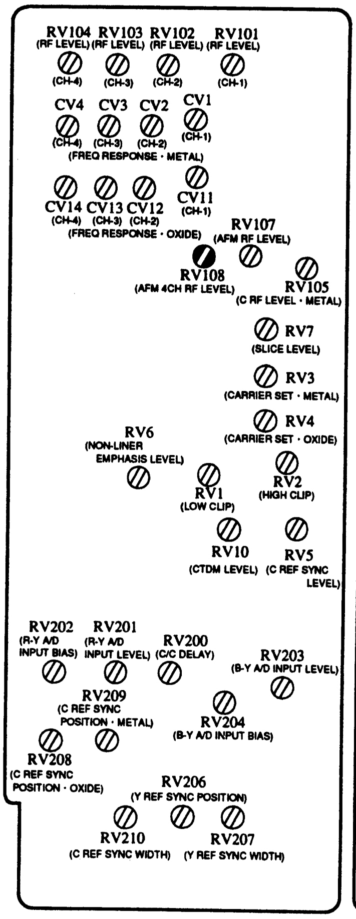
- Preparation

- AUDIO IN CH-1/CH-2: No signal
- Insert the BCT-20M and put the unit into the REC mode.
- Play back the recorded tape using a standard VTR player (BVW-75 or the equivalent).
- REC mode→adjustment
- Play mode→check
- Player CAP Lock Mode "4 FIELD"

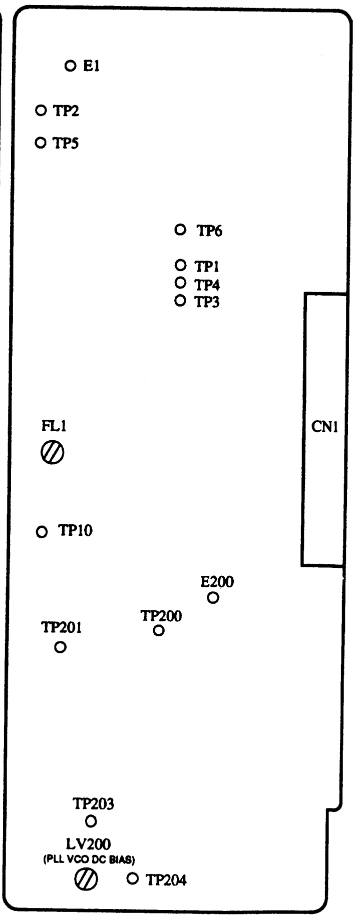
- Adjustment procedures

- Test point : CH-1 : IC602-14/VO-18 board:
  BVW-75 series
  CH-2 : TP31/EN-48 board:
  BVW-75 series
- Adj. point : ● RV108 /VDA-11P
- Spec. : A = B ± 15%


CH-1
A
B
CH-2
TRIG:CH-2


RV104 (RF LEVEL) (CH-4)
RV103 (RF LEVEL) (CH-3)
RV102 (RF LEVEL) (CH-2)
RV101 (RF LEVEL) (CH-1)
CV4 (CH-4)
CV3 (CH-3)
CV2 (CH-2)
CV1 (CH-1)
(FREQ RESPONSE · METAL)
CV14 (CH-4)
CV13 (CH-3)
CV12 (CH-2)
CV11 (CH-1)
(FREQ RESPONSE · OXIDE)
RV107 (AFM RF LEVEL)
RV108 (AFM 4CH RF LEVEL)
RV105 (C RF LEVEL · METAL)
RV7 (SLICE LEVEL)
RV3 (CARRIER SET · METAL)
RV4 (CARRIER SET · OXIDE)
RV6 (NON-LINER EMPHASIS LEVEL)
RV1 (LOW CLIP)
RV2 (HIGH CLIP)
RV10 (CTDM LEVEL)
RV5 (C REF SYNC LEVEL)
RV202 (R-Y A/D INPUT BIAS)
RV201 (R-Y A/D INPUT LEVEL)
RV200 (C/C DELAY)
RV203 (B-Y A/D INPUT LEVEL)
RV209 (C REF SYNC POSITION · METAL)
RV204 (B-Y A/D INPUT BIAS)
RV208 (C REF SYNC POSITION · OXIDE)
RV206 (Y REF SYNC POSITION)
RV210 (C REF SYNC WIDTH)
RV207 (Y REF SYNC WIDTH)

VDA-11/P BOARD(SOLDERING SIDE)


E1
TP2
TP5
TP6
TP1
TP4
TP3
FL1
CN1
TP10
E200
TP200
TP201
TP203
LV200 (PLL VCO DC BIAS)
TP204

VDA-11/P BOARD(COMPONENT SIDE)

8-5-45. Y PB RF Level Adjustment

- Setting

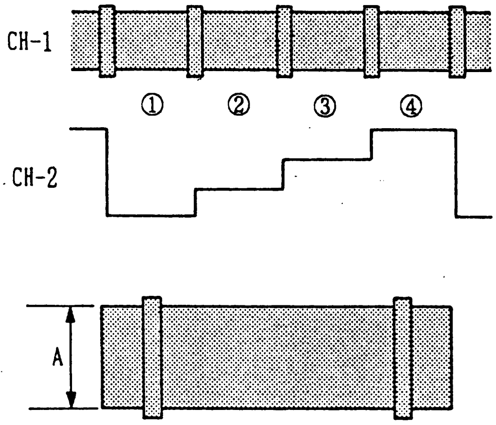
Equipment: Dualtrace Oscilloscope	Board: VP-24P board

- Preparation

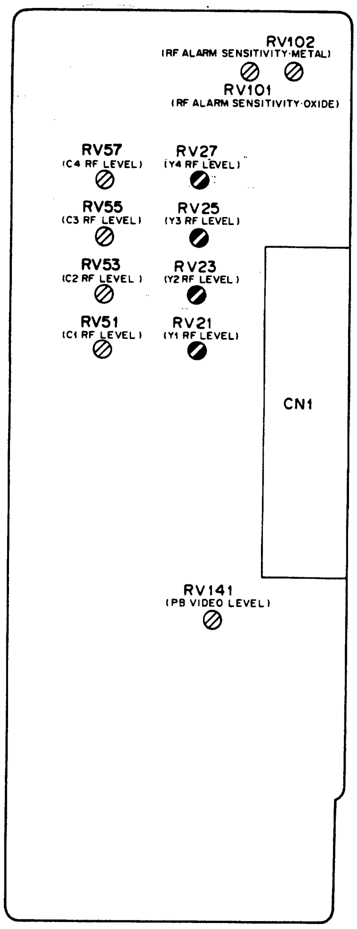
- Play back the flat signal on the alignment tape CR5-2APS.
- Make a tracking so that the RF level is maximum.

- Adjustment procedures

- Test point : CH-1 : TP33/Extension board
  (Terminated by 75 ohms.)
  CH-2 : TP25/Extension board
- Adj. point : ① : ● RV21/VP-24P
  ② : ● RV23/VP-24P
  ③ : ● RV25/VP-24P
  ④ : ● RV27/VP-24P
- Spec. : A = 220 ± 20mV


CH-1
①
②
③
④
CH-2
A

TRIG:CH-2


RV102
(RF ALARM SENSITIVITY·METAL)
RV101
(RF ALARM SENSITIVITY·OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)

8-5-46. C PB RF Level Adjustment

- Setting

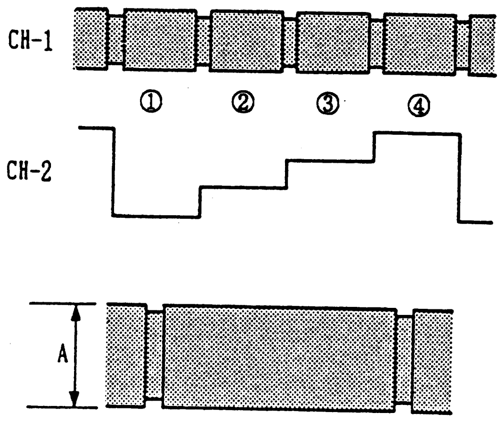
Equipment: Dualtrace Oscilloscope	Board: VP-24P board

- Preparation

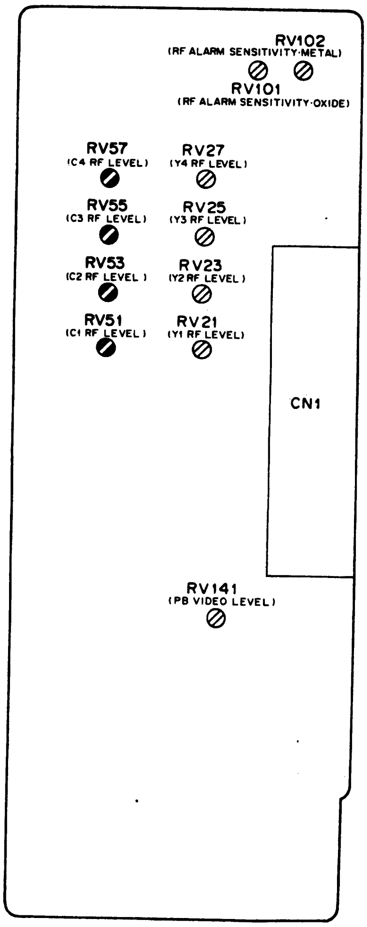
- Play back the flat field signal on the alignment tape CR 5-2APS.
- Make a tracking so that the RF level is maximum.

- Adjustment procedures

- Test point : CH-1 : TP31/Extension board
  (Terminated by 75 ohms.)
  CH-2 : TP25/Extension board
- Adj. point :① : ⊘ RV51/VP-24P
  ② : ⊘ RV53/VP-24P
  ③ : ⊘ RV55/VP-24P
  ④ : ⊘ RV57/VP-24P
- Spec. : A = 220 ± 20mV


CH-1
①
②
③
④
CH-2
A

TRIG : CH-2


RV102
(RF ALARM SENSITIVITY·METAL)
RV101
(RF ALARM SENSITIVITY·OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)

8-5-47. VF PB Output Level Adjustment

- Setting

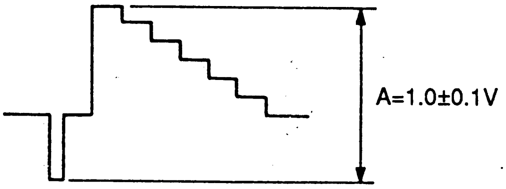
Equipment: Dualtrace Oscilloscope	Board: VP-24P board

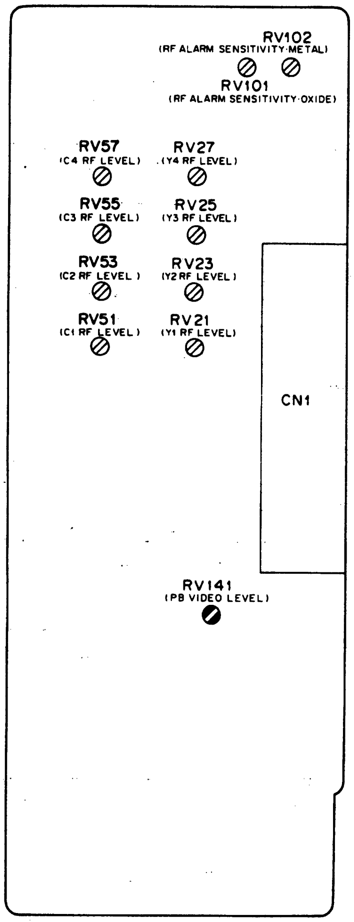
- Adjustment procedures

- Test point : TP38/Extension board
- Adj. point : Step 1.
  ⊘ RV141 (PB VIDEO LEVEL) / VP-24P
- Spec. : A = 1.0 ± 0.1V
  B = 0.66 ± 0.1V

Step 1.

- Play back the color-bar signal on the alignment tape CR5-2APS.

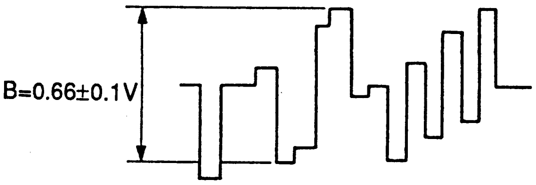



RV102
(RF ALARM SENSITIVITY·METAL)
RV101
(RF ALARM SENSITIVITY·OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)

Step 2.

- Press the CTDM button.



Check that level A is 0.5±0.1V

8-5-48. RF Alarm Sensitivity Adjustment

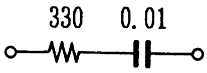
- Setting

Equipment: Dualtrace Oscilloscope	Board: VP-24P board

- Preparation

- Input signal: built-in color-bar
- Connect the clip cord with CR between TP26 and TP1 on the extension board.

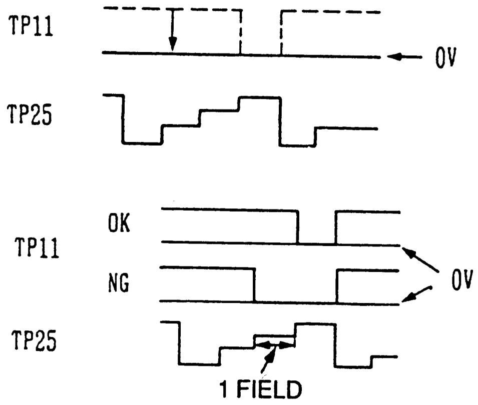
- chip cord with CR



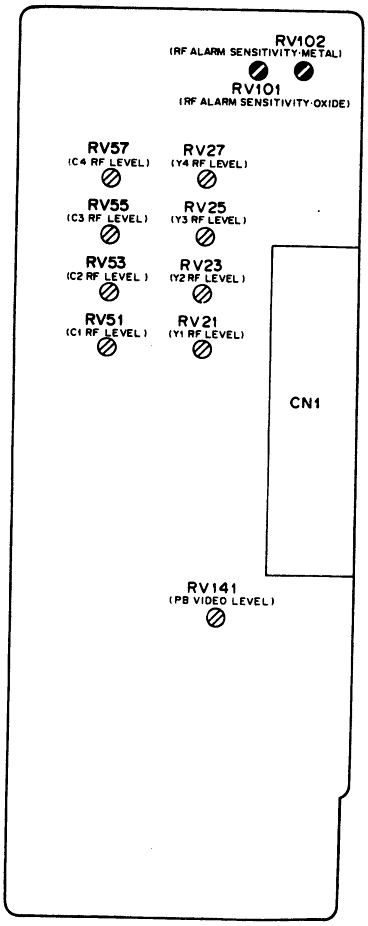
- Adjustment procedures

- Test point : TP11/Extension board:VP-24P
  TP25/Extension board: VP-24P
- Adj. point : • OXIDE adjustment
  RV101(RF ALARM SENSITIVITY):OXIDE /VP-24P

  • METAL adjustment
  RV102 (RF ALARM SENSITIVITY: METAL /VP-24P
- Spec. : Adjust so that the pulse waveform of the TP11 becomes 0V level point.


TP11
0V
TP25
OK
TP11
NG
0V
TP25
1 FIELD

1. Insert the BCT-20G and put the unit into the REC mode. (OXIDE adjustment)
2. After OXIDE adjustment, insert the BCT-20M and put the unit into the REC mode. (METAL mode)
3. After adjustment is completed, remove the clip cord.
4. Confirm that the waveform of the TP11 is not fall to 0V in over 2 fields continuously. When NG, readjust the 1~3.


RV102
(RF ALARM SENSITIVITY·METAL)
RV101
(RF ALARM SENSITIVITY·OXIDE)
RV57
(C4 RF LEVEL)
RV27
(Y4 RF LEVEL)
RV55
(C3 RF LEVEL)
RV25
(Y3 RF LEVEL)
RV53
(C2 RF LEVEL)
RV23
(Y2 RF LEVEL)
RV51
(C1 RF LEVEL)
RV21
(Y1 RF LEVEL)
CN1
RV141
(PB VIDEO LEVEL)

VP-24/P BOARD (COMPONENT SIDE)